# Results of Proficiency Test
## Jet Fuel A1
## March 2017

Organised by:   Institute for Interlaboratory Studies
                      Spijkenisse, the Netherlands

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# 1    INTRODUCTION

Since 1995, the Institute for Interlaboratory Studies organises every year proficiency tests (PT) for Jet Fuel A1. In the annual proficiency testing program of 2016/2017, it was decided to continue proficiency tests on Jet Fuel A1 and Jet Fuel Particle Size in accordance with the latest applicable version (October 2016) of the "Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS)", sometimes referred to as the "Joint Fuelling System Check List for Jet A-1".
In total 113 laboratories from 54 different countries registered for participation in the interlaboratory study for Jet Fuel A1 and Particle Size Distribution. See appendix 4 for the number of participants per country. For Jet Fuel A1 (main round) 112 participants from 54 countries did register and for Particle Size Distribution 47 participants from 31 countries.
In this report, the results of the two 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 organiser of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. For the main round Jet Fuel A1, it was decided to send two identical samples (both 1L bottles were labelled #17030) for the analyses according to the latest version of "Joint Fuelling System Check List for Jet A-1". For the Particle Size Distribution round, it was decided to send one 0.5L sample (labelled #17031). The participants were requested to report the test results using the indicated units and to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

## 2.1    ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

## 2.2    PROTOCOL

The protocol followed in the organisation was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4). This protocol can be downloaded from 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

### 2.4.1   JET FUEL A1 (MAIN)

The necessary bulk material, approximately 400 litres, was obtained from a local refinery and homogenised in a mixing vessel. From this batch 290 amber glass bottles of one litre were filled, later closed with inner and outer caps and labelled #17030. The remainder of the batch was stored. The homogeneity of the subsamples #17030 was checked by the determination of Density at 15°C in accordance with ASTM D4052 on ten stratified randomly selected samples.

|                   | Density at 15°C in kg/m$^3$ |
|-------------------|-----------------------------|
| Sample #17030-1   | 796.20                      |
| Sample #17030-2   | 796.20                      |
| Sample #17030-3   | 796.20                      |
| Sample #17030-4   | 796.19                      |
| Sample #17030-5   | 796.20                      |
| Sample #17030-6   | 796.19                      |
| Sample #17030-7   | 796.19                      |
| Sample #17030-8   | 796.20                      |
| Sample #17030-9   | 796.19                      |
| Sample #17030-10  | 796.19                      |

Table 1: homogeneity test of the test results of subsamples #17030

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)                 | 0.01                        |
| reference test method        | ASTM D4052:16               |
| 0.3 x R (ref. test method)   | 0.15                        |

Table 2: evaluation of repeatability of subsamples #17030

The calculated repeatability is less than 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of all subsamples #17030 was assumed.

### 2.4.2    JET FUEL PARTICLE SIZE DISTRIBUTION DETERMINATION (PS)

The bulk material for Particle Size Distribution Determination was obtained from a local refinery. Approximately 60 litres bulk material was homogenized. From this material 80 amber glass bottles of 0.5 litres were filled, later closed with inner and outer caps and labelled #17031. Each bottle was spiked with 0.83 grams of Lube oil, enriched with 10 mg/kg Arizona Dust A3. The homogeneity of the subsamples #17031 was checked by the determination of Particle Size Distribution in accordance with IP565 on eight stratified randomly selected samples.

|  | > 4 µm (c) counts/ml | > 6 µm (c) counts/ml | > 14 µm (c) counts/ml | > 21 µm (c) counts/ml | > 25 µm (c) counts/ml | > 30 µm (c) counts/ml |
|---|---|---|---|---|---|---|
| Sample #17031-1 | 19927 | 9217 | 505 | 72 | 20 | 6 |
| Sample #17031-2 | 20360 | 9439 | 518 | 74 | 22 | 6 |
| Sample #17031-3 | 20498 | 9494 | 509 | 66 | 16 | 4 |
| Sample #17031-4 | 20273 | 9421 | 519 | 74 | 21 | 6 |
| Sample #17031-5 | 20288 | 9368 | 492 | 66 | 16 | 5 |
| Sample #17031-6 | 20441 | 9517 | 540 | 83 | 25 | 7 |
| Sample #17031-7 | 20453 | 9494 | 532 | 84 | 22 | 6 |
| Sample #17031-8 | 20153 | 9350 | 513 | 73 | 21 | 8 |

Table 3: homogeneity test results of subsamples #17031

From the above test results, the calculated repeatabilities were calculated and compared with the repeatabilities (r) and/or with 0.3 times the reproducibilities (R) of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table:

|  | > 4 µm (c) counts/ml | > 6 µm (c) counts/ml | > 14 µm (c) counts/ml | > 21 µm (c) counts/ml | > 25 µm (c) counts/ml | > 30 µm (c) counts/ml |
|---|---|---|---|---|---|---|
| r (observed) | 527 | 278 | 42 | 19 | 9 | 3 |
| reference test method | IP565:13 | IP565:13 | IP565:13 | IP565:13 | IP565:13 | IP565:13 |
| 0.3 x R (ref. test method) | 666 | 593 | 76 | 17 | 6 | 2 |
| r (ref. test method) | 1753 | 1531 | 194 | 41 | 13 | 5 |

Table 4: evaluation of repeatabilities of subsamples #17031

The calculated repeatabilities (r) for the particle sizes > 4 µm (c), > 6 µm (c), > 14 µm (c), > 21 µm (c), > 25 µm (c) and > 30 µm (c) are in agreement with the corresponding target repeatabilities (r) of the reference test method. The calculated repeatabilities (r) for the particle sizes > 4 µm (c), > 6 µm (c) and > 14 µm (c) are also in agreement with 3 times the target reproducibility (R) of the respective reference test method. Therefore, homogeneity of the subsamples of #17031 was assumed.

Depending on their registration to each of the participating laboratories 2 x 1 litre bottle of Jet Fuel A1 labelled #17030 and/or a 0.5 litre bottle of Jet Fuel PS labelled #17031 was/were sent on March 1, 2017. An SDS was added to the sample package.

## 2.5 STABILITY OF THE SAMPLES

The stability of Jet Fuel A1, packed in the brown glass bottles was checked. The type of bottle was chosen in accordance with ASTM D4306:15. The material has been found sufficiently stable for the period of the proficiency test.

## 2.6 ANALYSES

The participants were requested to determine on sample #17030: Total Acidity, Aromatics by FIA, Aromatics by HPLC (in %M/M and %V/V), Colour Saybolt (ASTM D156 and ASTM 6045), Density at 15°C, Distillation (IBP, 10%, 50%, 90% recovered and FBP), Existent Gum (unwashed), Flash Point, Freezing Point, JFTOT, Kinematic Viscosity at -20°C, Mercaptan Sulphur, MSEP, Naphthalenes, Smoke Point, Specific Energy (on Sulphur free basis) and Total Sulphur.
The participants were requested to determine only Particle Size Distribution on sample #17031.

The analyses should be performed according to the "Aviation Fuel Quality Requirements for Jointly Operated Systems (AFQRJOS), version October 2016", also referred to as the "Joint Fuelling System Check List" or simply "Check List".

It was explicitly requested to treat the samples as if they were routine samples. Therefore, each laboratory is advised to perform only those analyses that normally are done in daily routine (but the laboratories are allowed to do all analyses). Furthermore, it was requested to report the test results using the indicated units on the report form and not to round the test results more, but report as much significant figures as possible. It was also requested not to report 'less than' test results, which are above the detection limit, because such test results cannot be used for meaningful statistical calculations.

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

## 3 RESULTS

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

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

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

## 3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

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

According to ISO 5725 the original test results per determination were submitted to Dixon's, Grubbs' and/or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.
Finally, the reproducibilities were calculated from the standard deviations by multiplying them with a factor of 2.8.

## 3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis.
The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

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

## 3.3 Z-SCORES

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

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

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

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

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

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

|  | $\lvert z \rvert < 1$ | good |
| --- | --- | --- |
| $1 <$ | $\lvert z \rvert < 2$ | satisfactory |
| $2 <$ | $\lvert z \rvert < 3$ | questionable |
| $3 <$ | $\lvert z \rvert$ | unsatisfactory |

## 4 EVALUATION

In this interlaboratory study problems with sample dispatch were encountered due to several reasons. Some laboratories in Afghanistan, Azerbaijan, Egypt, Georgia, Mauritius and Saudi-Arabia received the sample(s) rather late or not at all. Another reason for not reporting test results was brake down of equipment (especialty in the PT on particle size determination).
For the main round Jet Fuel A1, five participants reported the test results after the final reporting date and another five participants did not report any test results at all.
For the PT on Particle Size Distribution determination one participant reported the test results after the final reporting date and another twelve! participants did not report any test results at all.
Not all laboratories were able to report all analyses requested.

Finally 108 participants reported in total 2091 numerical test results. Observed were 63 outlying test results, which is 3.0% of the reported numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

## 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 where possible and applicable. These test methods are also in the tables together with the reported test results. The abbreviations, used in these tables, are listed in appendix 5.

In the iis PT reports, ASTM test methods are referred to with a number and if appropriate an indication of sub test method (e.g. D1840-B) and an added designation for the year that the test method was adopted or revised (e.g. D1840-B:07). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D1840-B:07(2013)). In the test results tables of Appendix 1 only the test method number and year of adoption or revision e.g. D1840-B:07 will be used.

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

Since the Joint Fuelling System Check List for Jet-A1 is continuously updated, the participants are advised to monitor the updates. The latest version at the time of this Round Robin is "DEF STAN 91-091/Issue 9, publication date: October 2016" and ASTM D1655:16c. One must keep in mind that ISO test methods are not mentioned in the "Checklist".

### Jet Fuel A1: sample #17030

Acidity, Total:    This determination was problematic at the low level 0.0016 mg KOH/g. Four statistical outliers were observed. Three participants reported a test method (ASTM D664 and ASTM D974) other than ASTM D3242 or IP354 mentioned in the check list for Jet Fuel A1. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirement of ASTM D3242:11. The large variation may (partly) be explained by rounding of the test results to three digits by about 50% of the reporting participants.

Aromatics by FIA: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with ASTM D1319:15.

Aromatics by HPLC: The determination in %M/M was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with ASTM D6379:11.

The determination in %V/V may not be problematic. Two statistical outliers were observed. Regretfully, no precision data for the determination in %V/V is mentioned in ASTM D6379:11. However, the calculated reproducibility after rejection of the statistical outliers was comparable to or smaller than the calculated reproducibility in %V/V of the proficiency tests iis16J01 and iis16J02 of 2016.

Colour Saybolt General:
Over the years the Colour Saybolt determination is problematic. The requirements of both Automated (ASTM D6045) and Manual (ASTM D156) appeared to be very strict in comparison to the reproducibilities observed over the years.

Colour Saybolt:    The determination was problematic for the automatic test method ASTM D6045. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirement of ASTM D6045:12. In last year's proficiency test (iis16J02) it was suggested that some of the variation may be caused by the fact that the majority of the laboratories reported to have used a different cell than the suggested 100 mm cell in ASTM D6045. The reported test results of seven participants that used a 100 mm cell is almost in line with the requirement of ASTM D6045:12. The calculated reproducibility of labs that reported to use a 50 mm cell is larger than the calculated reproducibility of labs that reported to use a 100 mm cell.
The manual test method ASTM D156 was also problematic. Five statistical outliers were observed. The calculated reproducibility is not in agreement with the requirement of ASTM D156:15.

Density:           This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility is in good agreement with the requirement of ASTM D4052:16.

Distillation:      This determination was not problematic. In total only one statistical outlier was observed over the five distillation parameters. All calculated reproducibilities, after rejection of the statistical outlier, are in agreement with the automated mode requirements of ASTM D86-A:16a.
When compared to the manual mode requirements of ASTM D86-M:16a only the calculated reproducibilities for 10% rec, 50% rec, 90% rec are in agreement.

Existent Gum:      This determination was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with ASTM D381:12.

Flash Point:       This determination was not problematic. One statistical outlier was observed. The calculated reproducibility is in agreement with IP170:14.

In the Joint Fuelling System Checklist both IP170/IP523/ISO13736 and ASTM D56 or ASTM D3828 are mentioned as test methods. Still several participants (four in total) reported test methods which are not equivalent to IP170, like D93 and ISO2719.

Freezing Point: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirement of ASTM D2386:15e1.

JFTOT: The test results for visual tube rating (VTR) are reported mostly as <1 or 1. No statistical analysis can be done on this parameter as this is a qualitative parameter. The AFQRJOS mentioned a limit for VTR<3 and all of the participants agreed on this.

Interferometric (ITR) and ellipsometric (ETR) tube ratings are new parameters for tube rating listed in the latest AFQRJOS of Oct 2016. In total 7 participants reported a test value for ITR and 3 particpants a test value for VTR. The limits for ITR and for ETR are both 85 nm maximum. Therefore it is surprisingly that two participants reported >85 nm for ITR. Further it is observed that the reported values for ITR or ETR are quite different from each other so that no conclusions could be drawn.

For Delta P the majority of the participants reported a value ≤1mmHg. Three participants reported a different value than ≤1mmHg.

Kin. Viscosity at -20°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirement of ASTM D445:17a.

Mercaptan Sulphur: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirement of ASTM D3227:16.

MSEP: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirement of ASTM D3948:14.

Naphthalenes: This determination may be problematic, depending on the test method used. The calculated reproducibility after rejection of the three statistical outliers is in full agreement with the requirement of ASTM D1840-**B**:07(2013), but not with the requirement of ASTM D1840-**A**:07(2013),.

When the test results from the reported procedures A and B are evaluated separately, only the calculated reproducibility of procedure B test results after rejection of the statistical outliers is in agreement with the respective requirements of ASTM D1840:07(2013).

Smoke Point:     This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirement of ASTM D1322:15e1-Manual.
When the test results from the reported Automated and Manual modes are evaluated separately, only the calculated reproducibility of the Manual mode is in agreement with the respective requirements of ASTM D1322:15e1.
One participant reported to use test method IP57. Please note that test method IP57 is not longer part of the Joint Fuelling System Checklist.

Specific Energy:   This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirement of ASTM D3338:09e2 (2014).

Sulphur, Total:   This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirement of ASTM D5453:16e1.

**Jet Fuel PS sample #17031: Particle Size Distribution Determination:**

The Joint Fuelling System Check List for Jet-A1 mentions test methods IP564, IP565 and IP577 as the reference test methods to determine the Particle Size Distribution in Jet Fuel A1. Over the last years iis has observed and concluded that these methods are biased and not as interchangeable as suggested by the checklist. Although no equipment suppliers are mentioned in the test methods, the brand of the automatic particle counter (APC) defines the test method. The automatic particle counter in test method IP564 is Parker Hannifin, in test method IP565 it is Stanhope-Seta and in test method IP577 it is Pamas. All Particle Size Distribution test data in counts per ml were collected in one test result table via the Data Entry Tool. For the statistical evaluation iis has separated the test data by test method IP564 or by IP565. The test results of IP577 were placed in the table of IP565 as iis had concluded in an earlier PT that the IP577 test data is most similar to IP565 (see iis16J01). However for the statistical evaluations the test data from IP577 were excluded.

In this PT again the brand of the APC was asked (see appendix 3). All participants mentioned the expected combination of test method and brand of APC, except one participant. This participant had mentioned test method IP564 along with the brand Pamas. It was decided to use the reported APC brand as leading and to place the data in the test results table of IP565.

The Particle Size Distribution Determination could also be reported in scale numbers according to ISO4406 scale. In the PTs of 2016 (iis16J01 and iis16J02) it was concluded that the bias effect observed between test methods IP564 and IP565 as reported in counts per ml is also present in the test results reported in scale number. Therefore, it was decided to separate the test results reported in scale number as well as based on reported test method IP564 or IP565. And the test results in scale number of IP577 were again placed in the IP565 test result tables.

In case a statistical outlier was observed in one of the particle size categories the test result in the corresponding category in counts/ml or ISO 4406 scale was excluded.

IP564: The determination according to IP564 was very problematic. In total fourteen statistical outliers were observed for the six particle size categories and one another test result was excluded. The calculated reproducibilities after rejection of the suspect data are not at all in agreement with the requirements of IP564:13 for almost all of the particle size categories. The test results varied over a large range, especially at the lower particle size categories: ≥4µm (c), ≥6µm (c) and ≥14µm (c).

The determination according to ISO4406 scale numbers may not be problematic. Four statistical outliers were observed for the six particle size categories and eleven other test results were excluded. However, the calculated reproducibilities after rejection of the suspect data for ≥4µm (c), ≥6µm (c) and for ≥14µm (c) categories are in agreement with the indicative requirements of IP564:13 annex C. No precision data were given in IP564:13 annex C for the other three categories.

IP565: The determination according to IP565 was not problematic for the determinations ≥6µm (c) and ≥30µm (c) categories, but it was problematic for ≥4µm (c), ≥14µm (c), ≥21µm (c) and ≥25µm (c). In total ten statistical outliers were observed and fourteen other test results excluded. The calculated reproducibilities, after rejection of the suspect data, are in agreement with the requirements of IP565:13 for ≥6µm (c) and ≥30µm (c) particle size categories but not for the other four categories.

As noticed in previous PTs it is observed again that the variation in the test results is much smaller with method IP565 than with IP564. A possible explanation could be that the calibration with Parker-Hannifin (IP564) is based on ISO4406 scale numbers and with Stanhope-Seta based (IP565) on counts/ml.

The determination according to ISO4406 scale numbers may not be problematic. Three statistical outliers were observed for the six particle size categories and fifteen other test results were excluded. However, the calculated reproducibilities after rejection of the suspect data for ≥4µm (c) and ≥6µm (c) categories are in agreement with the indicative requirements of IP565:13 annex C but not for ≥14µm (c) category. No precision data were given in IP565:13 annex C for the other categories.

## 4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of laboratories that participated. The reproducibilities derived from literature reference test methods (in casu ASTM test methods) and the calculated reproducibilities of samples #17030 and #17031 are compared in the next tables.

| Parameter | unit | n | average | 2.8 * sd | R (lit.) |
|---|---|---|---|---|---|
| Acidity, Total | mg KOH/g | 63 | 0.0016 | 0.0022 | 0.0016 |
| Aromatics by FIA | %V/V | 52 | 16.5 | 1.7 | 2.7 |
| Aromatics by HPLC | %M/M | 18 | 19.8 | 1.2 | 2.0 |
| Aromatics by HPLC | %V/V | 21 | 17.5 | 1.2 | n.a. |
| Colour Saybolt (automated) | | 39 | 18.0 | 2.1 | 1.2 |
| Colour Saybolt (manual) | | 50 | 17.7 | 2.9 | 2 |
| Density at 15°C | kg/m$^3$ | 104 | 796.2 | 0.3 | 0.5 |
| Initial Boiling Point | °C | 104 | 147.3 | 7.2 | 8.1 |
| Temp at 10% recovered | °C | 104 | 169.0 | 2.8 | 3.7 |
| Temp at 50% recovered | °C | 104 | 199.0 | 2.9 | 3.0 |
| Temp at 90% recovered | °C | 103 | 244.1 | 4.0 | 3.7 |
| Final Boiling Point | °C | 104 | 271.1 | 5.1 | 7.1 |
| Existent Gum (unwashed) | mg/100mL | 62 | 0.77 | 1.35 | 3.16 |
| Flash Point | °C | 99 | 40.6 | 2.7 | 3.2 |
| Freezing Point | °C | 84 | -53.8 | 2.0 | 2.5 |
| JFTOT – Visual Tube Rating | | 58 | ≤1 | n.a. | n.a. |
| JFTOT – Delta P | mmHg | 57 | ≤1 | n.a. | n.a. |
| Kinematic Viscosity at -20°C | mm$^2$/s | 67 | 3.957 | 0.080 | 0.075 |
| Mercaptan Sulphur as S | %M/M | 59 | 0.0004 | 0.0003 | 0.0003 |
| MSEP | rating | 76 | 91.4 | 11.1 | 10.9 |
| Naphthalenes | %V/V | 52 | 0.53 | 0.06 | 0.06 |
| Smoke Point | mm | 76 | 24.5 | 2.8 | 3.8 |
| Specific Energy (Net) | MJ/kg | 56 | 43.337 | 0.046 | 0.046 |
| Sulphur, Total | mg/kg | 88 | 593 | 72 | 75 |

Table 5: comparison of the observed and target reproducibilities of sample #17030

| Parameter – **IP564** | unit | n | average | 2.8 * sd | R (lit.) |
|---|---|---|---|---|---|
| Particle Size ≥ 4 µm (c) | counts/ml | 10 | 15602 | 7679 | 2968 |
| Particle Size ≥ 6 µm (c) | counts/ml | 10 | 5748 | 4259 | 1740 |
| Particle Size ≥ 14 µm (c) | counts/ml | 10 | 142 | 178 | 75 |
| Particle Size ≥ 21 µm (c) | counts/ml | 9 | 11.0 | 15.0 | 13.9 |
| Particle Size ≥ 25 µm (c) | counts/ml | 9 | 4.0 | 6.0 | 5.4 |
| Particle Size ≥ 30 µm (c) | counts/ml | 9 | 1.4 | 2.5 | 2.3 |
| Particle Size ≥ 4 µm (c) | ISO4406 scale number | 9 | 21.0 | 0.0 | 1.0 |
| Particle Size ≥ 6 µm (c) | ISO4406 scale number | 9 | 19.8 | 1.2 | 1.4 |
| Particle Size ≥ 14 µm (c) | ISO4406 scale number | 9 | 14.1 | 2.2 | 2.2 |
| Particle Size ≥ 21 µm (c) | ISO4406 scale number | 7 | 10.7 | 2.1 | n.a. |
| Particle Size ≥ 25 µm (c) | ISO4406 scale number | 7 | 9.4 | 1.5 | n.a. |
| Particle Size ≥ 30 µm (c) | ISO4406 scale number | 6 | 7.7 | 2.3 | n.a. |

Table 6: comparison of the observed and target reproducibilities of sample #17031 according to IP564

| Parameter – **IP565** | unit | n | average | 2.8 * sd | R (lit.) |
|---|---|---|---|---|---|
| Particle Size ≥ 4 µm (c) | counts/ml | 18 | 21977 | 3924 | 2388 |
| Particle Size ≥ 6 µm (c) | counts/ml | 18 | 8679 | 1794 | 1829 |
| Particle Size ≥ 14 µm (c) | counts/ml | 20 | 328 | 354 | 168 |
| Particle Size ≥ 21 µm (c) | counts/ml | 17 | 27.8 | 42.7 | 23.8 |
| Particle Size ≥ 25 µm (c) | counts/ml | 17 | 6.9 | 10.4 | 8.1 |
| Particle Size ≥ 30 µm (c) | counts/ml | 17 | 1.6 | 2.5 | 2.7 |
| Particle Size ≥ 4 µm (c) | ISO4406 scale number | 16 | 21.9 | 1.0 | 1.0 |
| Particle Size ≥ 6 µm (c) | ISO4406 scale number | 17 | 20.0 | 0.0 | 1.0 |
| Particle Size ≥ 14 µm (c) | ISO4406 scale number | 18 | 15.3 | 1.9 | 1.4 |
| Particle Size ≥ 21 µm (c) | ISO4406 scale number | 13 | 11.7 | 2.4 | n.a. |
| Particle Size ≥ 25 µm (c) | ISO4406 scale number | 13 | 9.7 | 2.4 | n.a. |
| Particle Size ≥ 30 µm (c) | ISO4406 scale number | 13 | 7.3 | 2.1 | n.a. |

Table 7: comparison of the observed and target reproducibilities of sample #17031 according to IP565

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

## 4.3  COMPARISON OF THE PROFICIENCY TEST OF MARCH 2017 WITH PREVIOUS PTS

| | March 2017 | September 2016 | March 2016 | September 2015 | March 2015 | September 2014 |
|---|---|---|---|---|---|---|
| Number of reporting labs | 108 | 137 | 103 | 129 | 102 | 132 |
| Number of test results reported | 2091 | 2710 | 1809 | 2695 | 1803 | 2729 |
| Statistical outliers | 63 | 49 | 40 | 74 | 44 | 62 |
| Percentage outliers | 3.0% | 1.8% | 2.2% | 2.7% | 2.4% | 2.3% |

Table 8: Comparison with previous proficiency tests

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

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

| Parameter | March 2017 | September 2016 | March 2016 | September 2015 | March 2015 | September 2014 |
|---|---|---|---|---|---|---|
| Acidity, Total | - | +/- | - | -- | - | -- |
| Aromatics by FIA | + | + | +/- | ++ | + | ++ |
| Aromatics by HPLC | + | +/- | - | + | +/- | - |
| Colour Saybolt (automated) | - | - | -- | - | -- | - |
| Colour Saybolt (manual) | - | -- | -- | - | - | -- |
| Density at 15°C | + | + | + | ++ | ++ | ++ |
| Distillation | + | + | + | + | + | + |
| Existent Gum | ++ | ++ | ++ | ++ | ++ | ++ |
| Flash Point | + | + | +/- | + | + | + |
| Freezing Point | + | +/- | + | + | + | + |
| Kinematic Viscosity at -20°C | +/- | - | + | +/- | - | +/- |
| Mercaptan Sulphur | +/- | +/- | +/- | + | +/- | ++ |
| MSEP | +/- | +/- | +/- | +/- | + | + |

| Parameter | March 2017 | September 2016 | March 2016 | September 2015 | March 2015 | September 2014 |
|---|---|---|---|---|---|---|
| Naphthalenes | +/- | - | +/- | - | +/- | + |
| Smoke Point | + | + | + | +/- | + | + |
| Specific Energy (Net) | +/- | +/- | +/- | - | - | - |
| Sulphur, Total | +/- | +/- | +/- | ++ | ++ | + |
| BOCLE | n.e. | - | n.e. | - | n.e. | + |
| Particle Size Distribution IP564 | -- | + | -- | -- | -- | - |
| ISO scale numbers IP564 | + | - | n.e. | n.e. | n.e. | n.e. |
| Particle Size Distribution IP565 | - | + | - | - | - | -- |
| ISO scale numbers IP565 | + | - | n.e. | n.e. | n.e. | n.e. |
| FAME | n.e. | -- | n.e. | - | n.e. | -- |

Table 9: comparison determinations against the requirements of the reference test methods

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

  ++:     group performed much better than the reference test method
  + :     group performed better than the reference test method
  +/-:    group performance equals the reference test method
  - :     group performed worse than the reference test method
  -- :    group performed much worse than the reference test method

## APPENDIX 1
Determination of Acidity, Total on sample #17030; results in mg KOH/g

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D3242 | 0.002 | | 0.63 | |
| 131 | | ----- | | ----- | |
| 132 | D3242 | 0.001 | | -1.08 | |
| 140 | D3242 | 0.001 | | -1.08 | |
| 150 | D3242 | 0.002 | | 0.63 | |
| 158 | | ----- | | ----- | |
| 159 | D3242 | 0.004 | | 4.04 | |
| 169 | D3242 | 0.001 | | -1.08 | |
| 171 | D3242 | 0.003 | | 2.33 | |
| 175 | D3242 | 0.0005 | | -1.93 | |
| 177 | D3242 | 0.001 | | -1.08 | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | D3242 | 0.0011 | | -0.91 | |
| 237 | D3242 | 0.0005434 | | -1.86 | |
| 238 | | ----- | | ----- | |
| 253 | D3242 | 0.002 | C | 0.63 | first reported: 0.005 |
| 273 | D974 | 0.0062 | R(0.01) | 7.80 | |
| 317 | | ----- | | ----- | |
| 323 | D3242 | 0.002 | | 0.63 | |
| 333 | D3242 | 0.001 | | -1.08 | |
| 334 | D3242 | 0.002 | | 0.63 | |
| 335 | D3242 | 0.000 | R(0.01) | -2.79 | |
| 336 | | ----- | | ----- | |
| 353 | | ----- | | ----- | |
| 360 | D3242 | 0.0019 | | 0.46 | |
| 372 | D3242 | 0.002 | | 0.63 | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | IP354 | 0.0606 | R(0.01) | 100.65 | |
| 447 | D3242 | 0.002 | | 0.63 | |
| 463 | D3242 | 0.0022 | | 0.97 | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | | ----- | | ----- | |
| 663 | D3242 | 0.0040 | | 4.04 | |
| 671 | | ----- | | ----- | |
| 824 | D3242 | 0.002 | C | 0.63 | first reported: 0.005 |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D3242 | 0.0011 | C | -0.91 | first reported: 0.005 |
| 998 | | ----- | | ----- | |
| 1006 | | 0.0012 | | -0.74 | |
| 1023 | | <0.07 | C | ----- | first reported: >0.07 |
| 1039 | D3242 | 0.001 | | -1.08 | |
| 1049 | D3242 | 0.00148 | | -0.26 | |
| 1059 | D3242 | 0.001 | | -1.08 | |
| 1062 | D3242 | 0.0010 | | -1.08 | |
| 1064 | D3242 | 0.0007 | | -1.59 | |
| 1080 | | ----- | | ----- | |
| 1082 | | ----- | | ----- | |
| 1097 | D3242 | 0.0023 | | 1.14 | |
| 1105 | D3242 | 0.00080 | | -1.42 | |
| 1109 | D3242 | 0.0032 | | 2.68 | |
| 1121 | | ----- | | ----- | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | | ----- | | ----- | |
| 1161 | D664 | 0.0019 | C | 0.46 | first reported: 0.009 |
| 1191 | D3242 | 0.0003 | | -2.27 | |
| 1205 | | ----- | | ----- | |
| 1212 | D3242 | 0.0014 | | -0.40 | |
| 1237 | | ----- | | ----- | |
| 1284 | D3242 | 0.002 | | 0.63 | |
| 1297 | D664 | <0.05 | | ----- | |
| 1299 | D3242 | 0.002 | | 0.63 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1318 | D3242 | 0.0019 | | 0.46 | |
| 1347 | D3242 | 0.0016 | | -0.06 | |
| 1348 | D3242 | 0.003 | | 2.33 | |
| 1372 | D3242 | 0.002219 | | 1.00 | |
| 1376 | D3242 | 0.0018 | | 0.29 | |
| 1379 | | ----- | | ----- | |
| 1397 | D3242 | 0.001 | | -1.08 | |
| 1399 | D3242 | 0.0027495 | | 1.91 | |
| 1412 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D3242 | 0.0012 | | -0.74 | |
| 1498 | | ----- | | ----- | |
| 1528 | D3242 | 0.0029 | | 2.16 | |
| 1531 | | ----- | | ----- | |
| 1538 | | ----- | | ----- | |
| 1585 | D3242 | 0.0013 | | -0.57 | |
| 1586 | D3242 | 0.002 | | 0.63 | |
| 1587 | D3242 | 0.00095 | C | -1.16 | first reported: 0.0095 |
| 1610 | IP354 | 0.005 | R(0.01) | 5.75 | |
| 1631 | D3242 | 0.0010 | | -1.08 | |
| 1634 | D3242 | 0.0011 | | -0.91 | |
| 1710 | D3242 | 0.0022 | | 0.97 | |
| 1720 | D3242 | 0.001 | | -1.08 | |
| 1724 | D3242 | 0.001 | | -1.08 | |
| 1740 | | ----- | | ----- | |
| 1755 | D3242 | 0.001 | | -1.08 | |
| 1757 | D3242 | 0.0014 | | -0.40 | |
| 1776 | D3242 | 0.0022 | | 0.97 | |
| 1810 | D3242 | 0.0016 | | -0.06 | |
| 1811 | D3242 | 0.0019 | | 0.46 | |
| 1883 | | ----- | | ----- | |
| 2129 | D3242 | 0.0012 | | -0.74 | |
| 2130 | IP354 | 0.001 | | -1.08 | |
| 6049 | D3242 | 0.0014 | | -0.40 | |
| 6075 | D3242 | 0.0016 | | -0.06 | |
| 6101 | | ----- | | ----- | |
| 6103 | D3242 | 0.001 | C | -1.08 | first reported: 0.0047 |
| 6108 | | ----- | | ----- | |

| | | |
|---|---|---|
| normality | not OK | |
| n | 63 | |
| outliers | 4 | |
| mean (n) | 0.00163 | |
| st.dev. (n) | 0.000781 | |
| R(calc.) | 0.00219 | |
| R(D3242:11) | 0.00164 | |
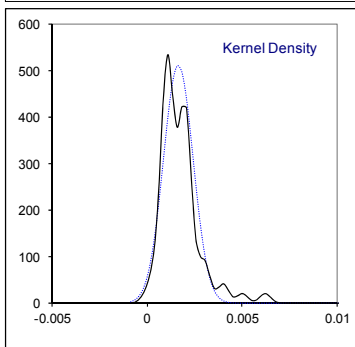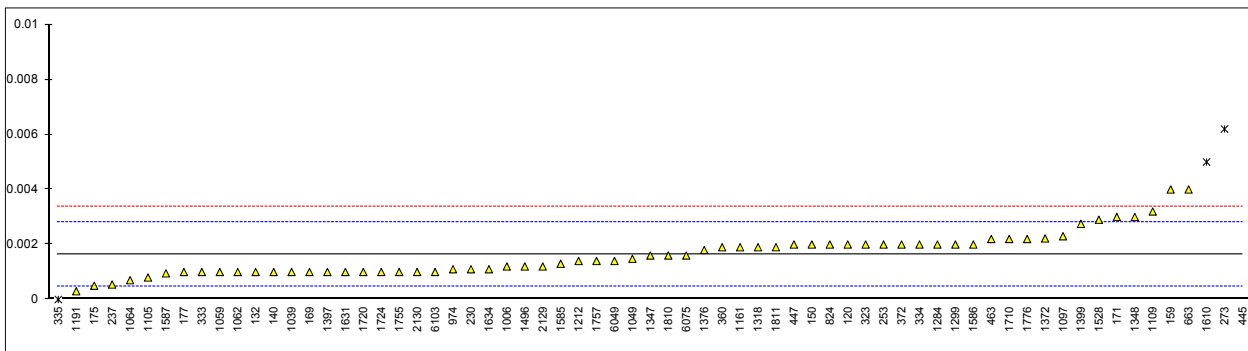
Determination of Aromatics by FIA (without oxygenate correction) on sample #17030; results in %V/V

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D1319 | 17.2 | | 0.75 | |
| 131 | | ----- | | ----- | |
| 132 | D1319 | 16.5 | | 0.04 | |
| 140 | D1319 | 17.2 | | 0.75 | |
| 150 | D1319 | 16.3 | | -0.17 | |
| 158 | | ----- | | ----- | |
| 159 | D1319 | 17.6 | | 1.16 | |
| 169 | D1319 | 17.1 | | 0.65 | |
| 171 | D1319 | 15.8 | | -0.68 | |
| 175 | D1319 | 17.6 | | 1.16 | |
| 177 | D1319 | 15.6 | | -0.88 | |
| 194 | D1319 | 16.44 | | -0.02 | |
| 228 | | ----- | | ----- | |
| 230 | D1319 | 16.07 | | -0.40 | |
| 237 | D1319 | 16.3 | | -0.17 | |
| 238 | | ----- | | ----- | |
| 253 | D1319 | 16.7 | | 0.24 | |
| 273 | | ----- | | ----- | |
| 317 | | ----- | | ----- | |
| 323 | D1319 | 15.8 | | -0.68 | |
| 333 | | ----- | | ----- | |
| 334 | D1319 | 14.1 | R(0.05) | -2.41 | |
| 335 | D1319 | 16.4 | | -0.06 | |
| 336 | | ----- | | ----- | |
| 353 | | ----- | | ----- | |
| 360 | D1319 | 16.2 | | -0.27 | |
| 372 | D1319 | 16.9 | | 0.45 | |
| 391 | D1319 | 16.6 | | 0.14 | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | D1319 | 16.17 | | -0.30 | |
| 447 | D1319 | 16.4 | | -0.06 | |
| 463 | D1319 | 15.35 | | -1.14 | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | D1319 | 14.29 | R(0.05) | -2.22 | |
| 663 | D1319 | 16.41 | | -0.05 | |
| 671 | | ----- | | ----- | |
| 824 | D1319 | 17.0 | | 0.55 | |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D1319 | 16.6 | | 0.14 | |
| 998 | | ----- | | ----- | |
| 1006 | | ----- | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | | ----- | | ----- | |
| 1049 | | ----- | | ----- | |
| 1059 | D1319 | 15.5 | | -0.98 | |
| 1062 | D1319 | 17.4 | | 0.96 | |
| 1064 | D1319 | 16.88 | | 0.43 | |
| 1080 | | ----- | | ----- | |
| 1082 | | ----- | | ----- | |
| 1097 | D1319 | 16.21 | | -0.26 | |
| 1105 | D1319 | 17.47 | | 1.03 | |
| 1109 | D1319 | 15.82 | | -0.66 | |
| 1121 | | ----- | | ----- | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | | ----- | | ----- | |
| 1161 | | ----- | | ----- | |
| 1191 | | ----- | | ----- | |
| 1205 | | ----- | | ----- | |
| 1212 | D1319 | 16.34 | | -0.13 | |
| 1237 | | ----- | | ----- | |
| 1284 | | ----- | | ----- | |
| 1297 | | ----- | | ----- | |
| 1299 | D1319 | 16.5 | | 0.04 | |
| 1318 | | ----- | | ----- | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D1319 | 16.96 | | 0.51 | |
| 1348 | D1319 | 16.9 | | 0.45 | |
| 1372 | D1319 | 16.84 | | 0.38 | |
| 1376 | D1319 | 16.29 | | -0.18 | |
| 1379 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1399 | D1319 | 17.1 | | 0.65 | |
| 1412 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D1319 | 16.6 | | 0.14 | |
| 1498 | | ----- | | ----- | |
| 1528 | EN15553 | 15.73 | | -0.75 | |
| 1531 | | ----- | | ----- | |
| 1538 | D1319 | 16.4 | | -0.06 | |
| 1585 | | ----- | | ----- | |
| 1586 | D1319 | 16.9 | | 0.45 | |
| 1587 | | ----- | | ----- | |
| 1610 | IP156 | 16.2 | | -0.27 | |
| 1631 | D1319 | 16.16 | | -0.31 | |
| 1634 | | ----- | | ----- | |
| 1710 | D1319 | 15.6 | | -0.88 | |
| 1720 | | ----- | | ----- | |
| 1724 | D1319 | 16.7 | | 0.24 | |
| 1740 | | ----- | | ----- | |
| 1755 | | ----- | | ----- | |
| 1757 | | ----- | | ----- | |
| 1776 | | ----- | | ----- | |
| 1810 | | ----- | | ----- | |
| 1811 | D1319 | 15.84 | | -0.64 | |
| 1883 | | ----- | | ----- | |
| 2129 | D1319 | 16.9 | | 0.45 | |
| 2130 | IP156 | 15.0 | | -1.49 | |
| 6049 | D1319 | 16.45 | | -0.01 | |
| 6075 | D1319 | 16.35 | | -0.12 | |
| 6101 | D1319 | 17.11 | | 0.66 | |
| 6103 | D1319 | 15.7 | C | -0.78 | first reported: 13.4 |
| 6108 | | ----- | | ----- | |

|  |  |
|--|--|
| normality | OK |
| n | 52 |
| outliers | 2 |
| mean (n) | 16.463 |
| st.dev. (n) | 0.5914 |
| R(calc.) | 1.656 |
| R(D1319:15) | 2.744 |

Determination of Aromatics by HPLC on sample #17030; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | | ----- | | ----- | |
| 131 | | ----- | | ----- | |
| 132 | | ----- | | ----- | |
| 140 | | ----- | | ----- | |
| 150 | | ----- | | ----- | |
| 158 | | ----- | | ----- | |
| 159 | | ----- | | ----- | |
| 169 | | ----- | | ----- | |
| 171 | D6379 | 23.4 | D(0.01) | 5.02 | False positive test results? |
| 175 | | ----- | | ----- | |
| 177 | | ----- | | ----- | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | | ----- | | ----- | |
| 237 | | ----- | | ----- | |
| 238 | | ----- | | ----- | |
| 253 | | ----- | | ----- | |
| 273 | | ----- | | ----- | |
| 317 | | ----- | | ----- | |
| 323 | | ----- | | ----- | |
| 333 | | ----- | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 336 | | ----- | | ----- | |
| 353 | | ----- | | ----- | |
| 360 | D6379 | 20.50 | | 1.03 | |
| 372 | D6379 | 19.6 | | -0.21 | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | | ----- | | ----- | |
| 447 | | ----- | | ----- | |
| 463 | D6379 | 20.00 | | 0.34 | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 671 | | ----- | | ----- | |
| 824 | IP391 | 19.2 | | -0.76 | |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | | ----- | | ----- | |
| 998 | | ----- | | ----- | |
| 1006 | | ----- | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | | ----- | | ----- | |
| 1049 | D6379 | 19.469 | | -0.39 | |
| 1059 | | ----- | | ----- | |
| 1062 | | ----- | | ----- | |
| 1064 | | ----- | | ----- | |
| 1080 | D6379 | 19.47 | | -0.39 | |
| 1082 | | ----- | | ----- | |
| 1097 | | ----- | | ----- | |
| 1105 | D6379 | 19.65 | | -0.14 | |
| 1109 | D6591 | 20.22 | | 0.64 | |
| 1121 | | ----- | | ----- | |
| 1126 | EN12916 | 20.2 | | 0.62 | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | | ----- | | ----- | |
| 1161 | EN12916 | 19.4 | | -0.49 | |
| 1191 | | ----- | | ----- | |
| 1205 | | ----- | | ----- | |
| 1212 | | ----- | | ----- | |
| 1237 | | ----- | | ----- | |
| 1284 | | ----- | | ----- | |
| 1297 | EN12916 | 19.87 | | 0.16 | |
| 1299 | IP436 | 20.5 | | 1.03 | |
| 1318 | D6379 | 19.47 | | -0.39 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | | ----- | | ----- | |
| 1348 | | ----- | | ----- | |
| 1372 | | ----- | | ----- | |
| 1376 | | ----- | | ----- | |
| 1379 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1399 | | ----- | | ----- | |
| 1412 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | | ----- | | ----- | |
| 1498 | | ----- | | ----- | |
| 1528 | D6379 | 19.99 | | 0.33 | |
| 1531 | | ----- | | ----- | |
| 1538 | | ----- | | ----- | |
| 1585 | D6379 | 19.01 | | -1.02 | |
| 1586 | | ----- | | ----- | |
| 1587 | | ----- | | ----- | |
| 1610 | | ----- | | ----- | |
| 1631 | | ----- | | ----- | |
| 1634 | | ----- | | ----- | |
| 1710 | | ----- | | ----- | |
| 1720 | | ----- | | ----- | |
| 1724 | | ----- | | ----- | |
| 1740 | | ----- | | ----- | |
| 1755 | | ----- | | ----- | |
| 1757 | | ----- | | ----- | |
| 1776 | | ----- | | ----- | |
| 1810 | D6379 | 19.6 | | -0.21 | |
| 1811 | D6379 | 19.7 | | -0.07 | |
| 1883 | | ----- | | ----- | |
| 2129 | IP391 | 19.70 | C | -0.07 | first reported: 17.75 |
| 2130 | | ----- | | ----- | |
| 6049 | | ----- | | ----- | |
| 6075 | | ----- | | ----- | |
| 6101 | | ----- | | ----- | |
| 6103 | | ----- | | ----- | |
| 6108 | | ----- | | ----- | |

| | | |
|---|---|---|
| normality | OK | |
| n | 18 | |
| outliers | 1 | |
| mean (n) | 19.753 | |
| st.dev. (n) | 0.4166 | |
| R(calc.) | 1.167 | |
| R(D6379:11) | 2.033 | |





Kernel Density

Determination of Aromatics by HPLC on sample #17030; results in %V/V

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | | ----- | | ----- | |
| 131 | | ----- | | ----- | |
| 132 | | ----- | | ----- | |
| 140 | | ----- | | ----- | |
| 150 | | ----- | | ----- | |
| 158 | | ----- | | ----- | |
| 159 | | ----- | | ----- | |
| 169 | | ----- | | ----- | |
| 171 | D6379 | 21.2 | R(0.01) | ----- | |
| 175 | | ----- | | ----- | |
| 177 | | ----- | | ----- | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | | ----- | | ----- | |
| 237 | | ----- | | ----- | |
| 238 | | ----- | | ----- | |
| 253 | | ----- | | ----- | |
| 273 | | ----- | | ----- | |
| 317 | | ----- | | ----- | |
| 323 | | ----- | | ----- | |
| 333 | D6379 | 17.6 | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | | ----- | | ----- | |
| 336 | | ----- | | ----- | |
| 353 | | ----- | | ----- | |
| 360 | | ----- | | ----- | |
| 372 | D6379 | 17.6 | | ----- | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | | ----- | | ----- | |
| 447 | | ----- | | ----- | |
| 463 | D6379 | 17.92 | | ----- | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | | ----- | | ----- | |
| 663 | | ----- | | ----- | |
| 671 | | ----- | | ----- | |
| 824 | IP391 | 17.1 | | ----- | |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | | ----- | | ----- | |
| 998 | | ----- | | ----- | |
| 1006 | | ----- | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | D6379 | 15.2 | R(0.01) | ----- | |
| 1049 | D6379 | 17.67186 | | ----- | |
| 1059 | | ----- | | ----- | |
| 1062 | | ----- | | ----- | |
| 1064 | | ----- | | ----- | |
| 1080 | | ----- | | ----- | |
| 1082 | D6379 | 17.4 | | ----- | |
| 1097 | | ----- | | ----- | |
| 1105 | D6379 | 17.68 | | ----- | |
| 1109 | | ----- | | ----- | |
| 1121 | | ----- | | ----- | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | | ----- | | ----- | |
| 1161 | EN12916 | 17.0 | | ----- | |
| 1191 | D6379 | 17.23 | | ----- | |
| 1205 | | ----- | | ----- | |
| 1212 | | ----- | | ----- | |
| 1237 | | ----- | | ----- | |
| 1284 | D6379 | 18.1 | | ----- | |
| 1297 | EN12916 | 17.38 | | ----- | |
| 1299 | IP436 | 17.9 | | ----- | |
| 1318 | D6379 | 17.55 | | ----- | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 |  | ----- |  | ----- |  |
| 1348 |  | ----- |  | ----- |  |
| 1372 |  | ----- |  | ----- |  |
| 1376 |  | ----- |  | ----- |  |
| 1379 |  | ----- |  | ----- |  |
| 1397 | D6379 | 16.697 | C | ----- | first reported: 20.663 |
| 1399 | IP436 | 17.3 |  | ----- |  |
| 1412 |  | ----- |  | ----- |  |
| 1429 |  | ----- |  | ----- |  |
| 1491 |  | ----- |  | ----- |  |
| 1496 |  | ----- |  | ----- |  |
| 1498 |  | ----- |  | ----- |  |
| 1528 | D6379 | 17.93 |  | ----- |  |
| 1531 |  | ----- |  | ----- |  |
| 1538 |  | ----- |  | ----- |  |
| 1585 | D6379 | 17.23 |  | ----- |  |
| 1586 |  | ----- |  | ----- |  |
| 1587 |  | ----- |  | ----- |  |
| 1610 |  | ----- |  | ----- |  |
| 1631 |  | ----- |  | ----- |  |
| 1634 |  | ----- |  | ----- |  |
| 1710 |  | ----- |  | ----- |  |
| 1720 | D6379 | 18.3 |  | ----- |  |
| 1724 | D6379 | 17.4 |  | ----- |  |
| 1740 |  | ----- |  | ----- |  |
| 1755 |  | ----- |  | ----- |  |
| 1757 |  | ----- |  | ----- |  |
| 1776 | D6379 | 17.0 |  | ----- |  |
| 1810 |  | ----- |  | ----- |  |
| 1811 |  | ----- |  | ----- |  |
| 1883 |  | ----- |  | ----- |  |
| 2129 | IP391 | 16.62 | C | ----- | first reported: 14.97 |
| 2130 |  | ----- |  | ----- |  |
| 6049 |  | ----- |  | ----- |  |
| 6075 |  | ----- |  | ----- |  |
| 6101 |  | ----- |  | ----- |  |
| 6103 |  | ----- |  | ----- |  |
| 6108 |  | ----- |  | ----- |  |

|  |  |
|--|--|
| normality | OK |
| n | 21 |
| outliers | 2 |
| mean (n) | 17.458 |
| st.dev. (n) | 0.4397 |
| R(calc.) | 1.231 |
| R(lit.) | unknown |
| compare R(iis16J01) | 1.443 |
| compare R(iis16J02) | 2.333 |





Kernel Density
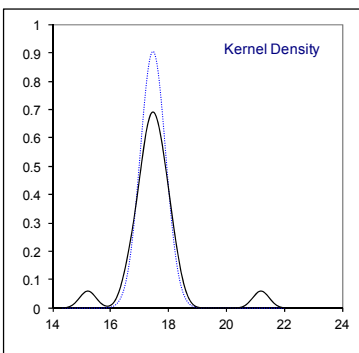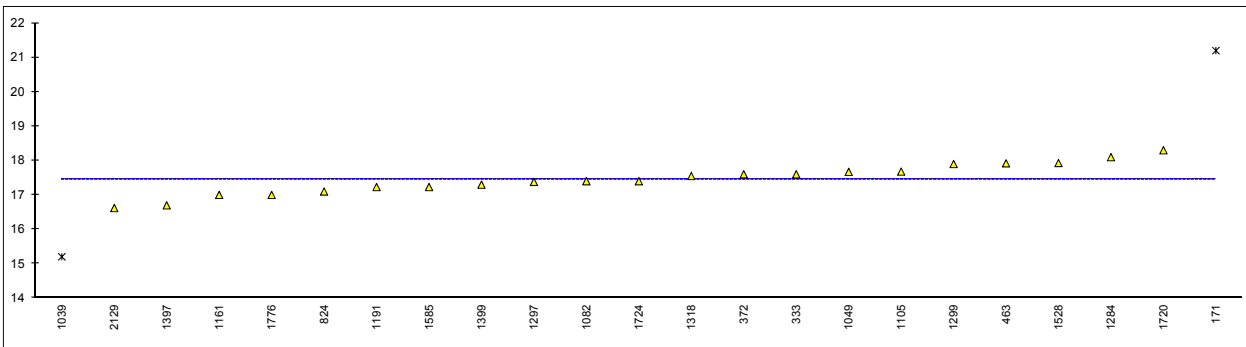
Determination of Colour Saybolt (Automated) on sample #17030; cell size in mm;

| lab | method | cell | value | mark | z(targ) | remarks |
|-----|--------|------|-------|------|---------|---------|
| 120 | D6045 | 50 | 18 | | 0.09 | |
| 131 | | ----- | ----- | | ----- | |
| 132 | | ----- | ----- | | ----- | |
| 140 | | ----- | ----- | | ----- | |
| 150 | D6045 | ----- | 17 | | -2.17 | |
| 158 | | ----- | ----- | | ----- | |
| 159 | D6045 | 100 | 19 | | 2.35 | |
| 169 | D6045 | 50 | 16.4 | | -3.52 | |
| 171 | D6045 | ----- | 22 | R(0.01) | 9.12 | |
| 175 | | ----- | ----- | | ----- | |
| 177 | | ----- | ----- | | ----- | |
| 194 | | ----- | ----- | | ----- | |
| 228 | | ----- | ----- | | ----- | |
| 230 | | ----- | ----- | | ----- | |
| 237 | | ----- | ----- | | ----- | |
| 238 | | ----- | ----- | | ----- | |
| 253 | | ----- | ----- | | ----- | |
| 273 | | ----- | ----- | | ----- | |
| 317 | | ----- | ----- | | ----- | |
| 323 | D6045 | 50 | 17 | | -2.17 | |
| 333 | D6045 | ----- | 18 | | 0.09 | |
| 334 | | ----- | ----- | | ----- | |
| 335 | | ----- | ----- | | ----- | |
| 336 | | ----- | ----- | | ----- | |
| 353 | D6045 | 50 | 17 | | -2.17 | |
| 360 | | ----- | ----- | | ----- | |
| 372 | D6045 | 50 | 19 | | 2.35 | |
| 391 | | ----- | ----- | | ----- | |
| 398 | | ----- | ----- | | ----- | |
| 399 | | ----- | ----- | | ----- | |
| 445 | D6045 | 50 | 17 | | -2.17 | |
| 447 | D6045 | 100 | 19 | | 2.35 | |
| 463 | | ----- | ----- | | ----- | |
| 468 | | ----- | ----- | | ----- | |
| 473 | D6045 | ----- | 18 | | 0.09 | |
| 603 | | ----- | ----- | | ----- | |
| 604 | | ----- | ----- | | ----- | |
| 608 | | ----- | ----- | | ----- | |
| 631 | D6045 | 50 | 18 | | 0.09 | |
| 663 | | ----- | ----- | | ----- | |
| 671 | | ----- | ----- | | ----- | |
| 824 | D6045 | ----- | 18 | | 0.09 | |
| 825 | | ----- | ----- | | ----- | |
| 904 | | ----- | ----- | | ----- | |
| 962 | | ----- | ----- | | ----- | |
| 963 | | ----- | ----- | | ----- | |
| 974 | | ----- | ----- | | ----- | |
| 998 | | ----- | ----- | | ----- | |
| 1006 | | ----- | ----- | | ----- | |
| 1023 | D6045 | 50 | 18 | | 0.09 | |
| 1039 | | ----- | ----- | | ----- | |
| 1049 | D6045 | 50 | 18 | | 0.09 | |
| 1059 | | ----- | ----- | | ----- | |
| 1062 | D6045 | 50 | 18 | C | 0.09 | first reported: 28 and cell 100 |
| 1064 | D6045 | 50 | 18.0 | | 0.09 | |
| 1080 | | ----- | ----- | | ----- | |
| 1082 | D6045 | ----- | 18 | | 0.09 | |
| 1097 | | ----- | ----- | | ----- | |
| 1105 | D6045 | 50 | 18 | | 0.09 | |
| 1109 | D6045 | 100 | 18 | | 0.09 | |
| 1121 | | ----- | ----- | | ----- | |
| 1126 | | ----- | ----- | | ----- | |
| 1146 | | ----- | ----- | | ----- | |
| 1150 | | ----- | ----- | | ----- | |
| 1155 | | ----- | ----- | | ----- | |
| 1161 | D6045 | ----- | 17 | | -2.17 | |
| 1191 | D6045 | 100 | 19 | | 2.35 | |
| 1205 | | ----- | ----- | | ----- | |
| 1212 | | ----- | ----- | | ----- | |
| 1237 | | ----- | ----- | | ----- | |
| 1284 | D6045 | 50 | 19 | | 2.35 | |
| 1297 | | ----- | ----- | | ----- | |
| 1299 | D6045 | 50 | 18 | | 0.09 | |
| 1318 | D6045 | 100 | 18 | | 0.09 | |

| lab | method | cell | value | mark | z(targ) | remarks |
|-----|--------|------|-------|------|---------|---------|
| 1347 |       | ----- | ----- |      | ----- | |
| 1348 |       | ----- | ----- |      | ----- | |
| 1372 | D6045 | 100   | 18    |      | 0.09  | |
| 1376 | D6045 | ----- | 19    |      | 2.35  | |
| 1379 |       | ----- | ----- |      | ----- | |
| 1397 |       | ----- | ----- |      | ----- | |
| 1399 | D6045 | ----- | 20    | R(0.05) | 4.61 | |
| 1412 |       | ----- | ----- |      | ----- | |
| 1429 | D6045 | 50    | 19    |      | 2.35  | |
| 1491 |       | ----- | ----- |      | ----- | |
| 1496 |       | ----- | ----- |      | ----- | |
| 1498 |       | ----- | ----- |      | ----- | |
| 1528 | D6045 | 50    | 17    |      | -2.17 | |
| 1531 | D6045 | ----- | 17    |      | -2.17 | |
| 1538 |       | ----- | ----- |      | ----- | |
| 1585 |       | ----- | ----- |      | ----- | |
| 1586 | D6045 | 100   | 18    |      | 0.09  | |
| 1587 | D6045 | 50    | 18    |      | 0.09  | |
| 1610 |       | ----- | ----- |      | ----- | |
| 1631 | D6045 | ----- | 18    |      | 0.09  | |
| 1634 |       | ----- | ----- |      | ----- | |
| 1710 |       | ----- | ----- |      | ----- | |
| 1720 | D6045 | 50    | 19.0  |      | 2.35  | |
| 1724 |       | ----- | ----- |      | ----- | |
| 1740 |       | ----- | ----- |      | ----- | |
| 1755 |       | ----- | ----- |      | ----- | |
| 1757 |       | ----- | ----- |      | ----- | |
| 1776 |       | ----- | ----- |      | ----- | |
| 1810 | D6045 | 50    | 17    |      | -2.17 | |
| 1811 | D6045 | 50    | 19    |      | 2.35  | |
| 1883 |       | ----- | ----- |      | ----- | |
| 2129 | D6045 | 50    | 18.0  |      | 0.09  | |
| 2130 | D6045 | 50    | 18    |      | 0.09  | |
| 6049 |       | ----- | ----- |      | ----- | |
| 6075 |       | ----- | ----- |      | ----- | |
| 6101 |       | ----- | ----- |      | ----- | |
| 6103 | D6045 | ----- | 17    |      | -2.17 | |
| 6108 |       | ----- | ----- |      | ----- | |

|           |       | | Test results 50mm Cell only | Test results 100mm Cell only |
|-----------|-------|-|------------------------------|-------------------------------|
| normality | OK    | | OK    | OK    |
| n         | 39    | | 22    | 7     |
| outliers  | 2     | | 0     | 0     |
| mean (n)  | 17.96 | | 17.93 | 18.43 |
| st.dev. (n) | 0.734 | | 0.770 | 0.535 |
| R(calc.)  | 2.06  | | 2.16  | 1.50  |
| R(D6045:12) | 1.24 | | 1.24  | 1.24  |
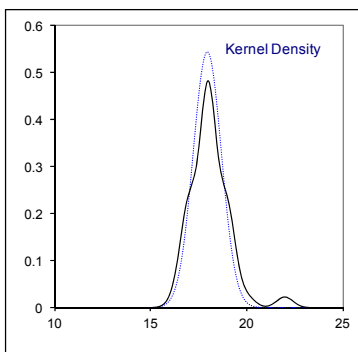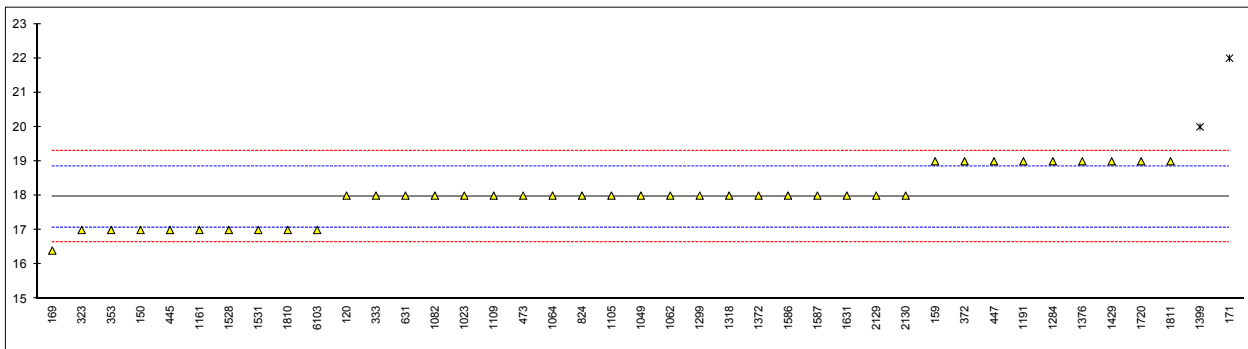
Determination of Colour Saybolt (Manual) on sample #17030;

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D156 | 18 | | 0.48 | |
| 131 | | ----- | | ----- | |
| 132 | D156 | 18 | | 0.48 | |
| 140 | D156 | 17 | | -0.92 | |
| 150 | | ----- | | ----- | |
| 158 | | ----- | | ----- | |
| 159 | | ----- | | ----- | |
| 169 | | ----- | | ----- | |
| 171 | D156 | 19 | | 1.88 | |
| 175 | | ----- | | ----- | |
| 177 | D156 | 18 | | 0.48 | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | D156 | 16 | | -2.32 | |
| 237 | D156 | 19 | | 1.88 | |
| 238 | D156 | 20 | | 3.28 | |
| 253 | D156 | 19 | | 1.88 | |
| 273 | D156 | 18 | | 0.48 | |
| 317 | D156 | 17 | | -0.92 | |
| 323 | D156 | 17 | | -0.92 | |
| 333 | | ----- | | ----- | |
| 334 | D156 | 16 | | -2.32 | |
| 335 | D156 | 17 | | -0.92 | |
| 336 | D156 | 18 | | 0.48 | |
| 353 | | ----- | | ----- | |
| 360 | D156 | 18 | | 0.48 | |
| 372 | D156 | 18 | | 0.48 | |
| 391 | D156 | 16 | | -2.32 | |
| 398 | D156 | 15 | | -3.72 | |
| 399 | D156 | 17 | | -0.92 | |
| 445 | | ----- | | ----- | |
| 447 | D156 | 18 | | 0.48 | |
| 463 | | ----- | | ----- | |
| 468 | D156 | 17 | C | -0.92 | first reported: 9 |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | D156 | 18 | | 0.48 | |
| 608 | D156 | 13 | R(0.05) | -6.52 | |
| 631 | | ----- | | ----- | |
| 663 | D156 | 18 | | 0.48 | |
| 671 | D156 | 18 | | 0.48 | |
| 824 | | ----- | | ----- | |
| 825 | D156 | 18 | | 0.48 | |
| 904 | D156 | 18 | | 0.48 | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D156 | 19 | | 1.88 | |
| 998 | D156 | 13 | R(0.05) | -6.52 | |
| 1006 | | ----- | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | D156 | 18 | | 0.48 | |
| 1049 | | ----- | | ----- | |
| 1059 | D156 | 19 | | 1.88 | |
| 1062 | | ----- | | ----- | |
| 1064 | D156 | 18.0 | | 0.48 | |
| 1080 | D156 | 19 | | 1.88 | |
| 1082 | | ----- | | ----- | |
| 1097 | NF M 07-003 | 18 | | 0.48 | |
| 1105 | | ----- | | ----- | |
| 1109 | D156 | 18 | | 0.48 | |
| 1121 | D156 | 15 | | -3.72 | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | | ----- | | ----- | |
| 1161 | | ----- | | ----- | |
| 1191 | | ----- | | ----- | |
| 1205 | | ----- | | ----- | |
| 1212 | D156 | 18 | | 0.48 | |
| 1237 | | ----- | | ----- | |
| 1284 | | ----- | | ----- | |
| 1297 | | ----- | | ----- | |
| 1299 | | ----- | | ----- | |
| 1318 | | ----- | | ----- | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D156 | 17 | | -0.92 | |
| 1348 | D156 | 19 | | 1.88 | |
| 1372 | | ----- | | ----- | |
| 1376 | | ----- | | ----- | |
| 1379 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1399 | | ----- | | ----- | |
| 1412 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D156 | 21 | R(0.05) | 4.68 | |
| 1498 | | ----- | | ----- | |
| 1528 | D156 | 18 | | 0.48 | |
| 1531 | | ----- | | ----- | |
| 1538 | D156 | 18 | | 0.48 | |
| 1585 | D156 | 17 | | -0.92 | |
| 1586 | | ----- | | ----- | |
| 1587 | | ----- | | ----- | |
| 1610 | D156 | 26 | R(0.01) | 11.68 | |
| 1631 | | ----- | | ----- | |
| 1634 | D156 | 17 | | -0.92 | |
| 1710 | D156 | 18 | | 0.48 | |
| 1720 | | ----- | | ----- | |
| 1724 | D156 | 17 | | -0.92 | |
| 1740 | | ----- | | ----- | |
| 1755 | D156 | 18 | | 0.48 | |
| 1757 | | ----- | | ----- | |
| 1776 | D156 | 16 | | -2.32 | |
| 1810 | | ----- | | ----- | |
| 1811 | | ----- | | ----- | |
| 1883 | D156 | 17 | | -0.92 | |
| 2129 | D156 | 18 | | 0.48 | |
| 2130 | | ----- | | ----- | |
| 6049 | D156 | 18 | | 0.48 | |
| 6075 | D156 | 17 | | -0.92 | |
| 6101 | D156 | 22 | C,R(0.05) | 6.08 | first reported: 24 |
| 6103 | | ----- | | ----- | |
| 6108 | | ----- | | ----- | |

| | | |
|---|---|---|
| normality | OK | |
| n | 50 | |
| outliers | 5 | |
| mean (n) | 17.66 | |
| st.dev. (n) | 1.022 | |
| R(calc.) | 2.86 | |
| R(D156:15) | 2 | |
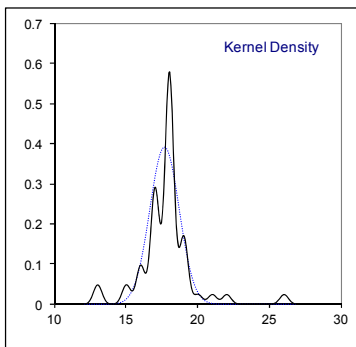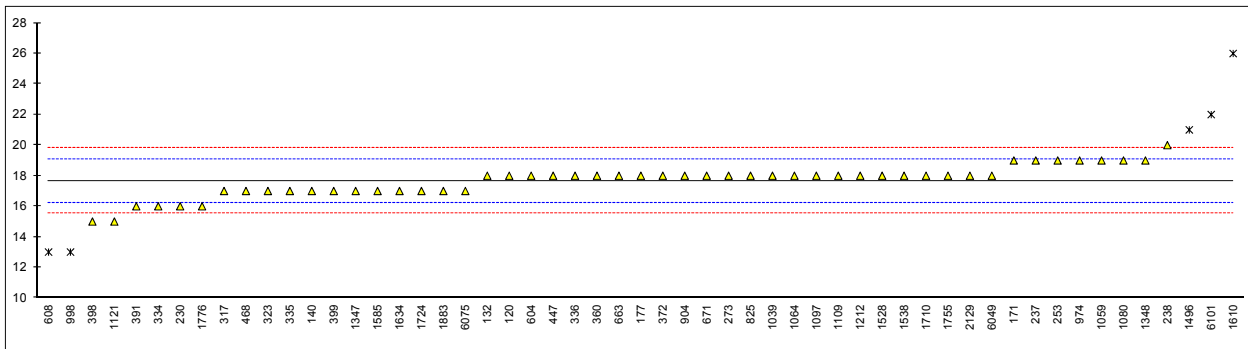
Determination of Density at 15°C on sample #17030; results in kg/m$^3$

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D4052 | 796.1 | | -0.55 | |
| 131 | | ----- | | ----- | |
| 132 | D4052 | 796.2 | | 0.01 | |
| 140 | D4052 | 796.2 | | 0.01 | |
| 150 | D4052 | 796.2 | | 0.01 | |
| 158 | | ----- | | ----- | |
| 159 | D4052 | 796.3 | | 0.57 | |
| 169 | D4052 | 796.2 | | 0.01 | |
| 171 | D4052 | 796.1 | | -0.55 | |
| 175 | D4052 | 796.2 | | 0.01 | |
| 177 | D4052 | 796.0 | | -1.11 | |
| 194 | D4052 | 796.1 | | -0.55 | |
| 228 | D4052 | 796.3 | | 0.57 | |
| 230 | D4052 | 796.20 | | 0.01 | |
| 237 | D4052 | 796.27 | | 0.40 | |
| 238 | D4052 | 795.6 | R(0.01) | -3.35 | |
| 253 | D4052 | 796.0 | | -1.11 | |
| 273 | D4052 | 796.2 | | 0.01 | |
| 317 | D4052 | 796.2 | | 0.01 | |
| 323 | D4052 | 796.0 | | -1.11 | |
| 333 | D4052 | 796.2 | | 0.01 | |
| 334 | D4052 | 796.3 | | 0.57 | |
| 335 | D4052 | 796.3 | | 0.57 | |
| 336 | D4052 | 796.3 | | 0.57 | |
| 353 | IP365 | 796.1 | | -0.55 | |
| 360 | D4052 | 796.2 | | 0.01 | |
| 372 | D4052 | 796.2 | | 0.01 | |
| 391 | D4052 | 796.2 | | 0.01 | |
| 398 | D4052 | 796.2 | | 0.01 | |
| 399 | D4052 | 796.3 | | 0.57 | |
| 445 | D4052 | 796.2 | | 0.01 | |
| 447 | D4052 | 796.2 | | 0.01 | |
| 463 | D4052 | 796.28 | | 0.45 | |
| 468 | D4052 | 796.1 | | -0.55 | |
| 473 | D4052 | 796.0 | | -1.11 | |
| 603 | D4052 | 796.5 | | 1.69 | |
| 604 | D4052 | 796.23 | | 0.17 | |
| 608 | D4052 | 796.3 | | 0.57 | |
| 631 | D4052 | 796.17 | | -0.16 | |
| 663 | D4052 | 796.195 | | -0.02 | |
| 671 | D4052 | 796.2 | | 0.01 | |
| 824 | D4052 | 796.2 | | 0.01 | |
| 825 | D4052 | 796.2 | | 0.01 | |
| 904 | D4052 | 796.3 | | 0.57 | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D4052 | 796.2 | | 0.01 | |
| 998 | D4052 | 796.3 | | 0.57 | |
| 1006 | D4052 | 796.4 | | 1.13 | |
| 1023 | D4052 | 796.2 | C | 0.01 | first reported: 0.7962 kg/m$^3$ |
| 1039 | ISO12185 | 796.4 | | 1.13 | |
| 1049 | D4052 | 796.04 | | -0.89 | |
| 1059 | D4052 | 796.2 | | 0.01 | |
| 1062 | D4052 | 796.2 | C | 0.01 | first reported: 736.2 |
| 1064 | D4052 | 796.10 | | -0.55 | |
| 1080 | D4052 | 796.1 | | -0.55 | |
| 1082 | D4052 | 796.1 | | -0.55 | |
| 1097 | ISO12185 | 796.24 | | 0.23 | |
| 1105 | D4052 | 796.05 | | -0.83 | |
| 1109 | D4052 | 796.2 | | 0.01 | |
| 1121 | D4052 | 796.3 | | 0.57 | |
| 1126 | D4052 | 796.17 | | -0.16 | |
| 1146 | D4052 | 796.17 | | -0.16 | |
| 1150 | ISO12185 | 796.19 | | -0.05 | |
| 1155 | ISO3675 | 796.4 | | 1.13 | |
| 1161 | ISO12185 | 796.20 | | 0.01 | |
| 1191 | D4052 | 796.2 | | 0.01 | |
| 1205 | ISO12185 | 796.21 | | 0.06 | |
| 1212 | D4052 | 796.2 | | 0.01 | |
| 1237 | ISO12185 | 796.0 | | -1.11 | |
| 1284 | D4052 | 796.27 | | 0.40 | |
| 1297 | D4052 | 796.21 | C | 0.06 | first reported: 792.1 |
| 1299 | D4052 | 796.3 | | 0.57 | |
| 1318 | D4052 | 796.18 | C | -0.11 | reported 796.18 kg/L |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D4052 | 796.26 | | 0.34 | |
| 1348 | D4052 | 796.2 | | 0.01 | |
| 1372 | D4052 | 796.74 | R(0.01) | 3.03 | |
| 1376 | D4052 | 796.2 | | 0.01 | |
| 1379 | | ----- | | ----- | |
| 1397 | D4052 | 796.2 | | 0.01 | |
| 1399 | D4052 | 796.1 | C | -0.55 | first reported: 797.288 |
| 1412 | D4052 | 796.2 | | 0.01 | |
| 1429 | D4052 | 796.2 | | 0.01 | |
| 1491 | D4052 | 796.19 | | -0.05 | |
| 1496 | D1298 | 796.3 | | 0.57 | |
| 1498 | D4052 | 796.2 | | 0.01 | |
| 1528 | D4052 | 796.16 | | -0.22 | |
| 1531 | D4052 | 796.4 | | 1.13 | |
| 1538 | D1298 | 796.3 | | 0.57 | |
| 1585 | D4052 | 796.20 | | 0.01 | |
| 1586 | D4052 | 796.3 | | 0.57 | |
| 1587 | D4052 | 796.16 | | -0.22 | |
| 1610 | IP365 | 796.2 | | 0.01 | |
| 1631 | D4052 | 796.1 | | -0.55 | |
| 1634 | D4052 | 796.208 | | 0.05 | |
| 1710 | D4052 | 796.2 | | 0.01 | |
| 1720 | D4052 | 796.3 | C | 0.57 | first reported: 791.1 |
| 1724 | D4052 | 796.2 | | 0.01 | |
| 1740 | D4052 | 796.2 | | 0.01 | |
| 1755 | D4052 | 796.12 | | -0.44 | |
| 1757 | D7777 | 796.1 | | -0.55 | |
| 1776 | D4052 | 796.2 | | 0.01 | |
| 1810 | D4052 | 796.1 | | -0.55 | |
| 1811 | D4052 | 796.2 | | 0.01 | |
| 1883 | D1298 | 795.9 | | -1.67 | |
| 2129 | D4052 | 796.2 | | 0.01 | |
| 2130 | IP365 | 796.2 | | 0.01 | |
| 6049 | D4052 | 796.2 | | 0.01 | |
| 6075 | ISO12185 | 796.05 | | -0.83 | |
| 6101 | D1298 | 796.2 | C | 0.01 | first reported: 795.3 |
| 6103 | ISO12185 | 796.45 | | 1.41 | |
| 6108 | | ----- | | ----- | |

| | |
|---|---|
| normality | suspect |
| n | 104 |
| outliers | 2 |
| mean (n) | 796.199 |
| st.dev. (n) | 0.0975 |
| R(calc.) | 0.273 |
| R(D4052:16) | 0.50 |
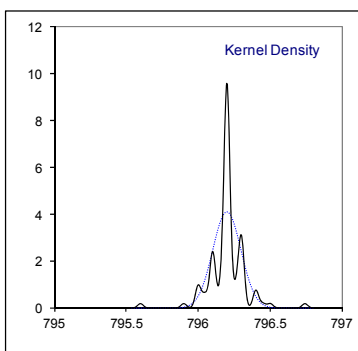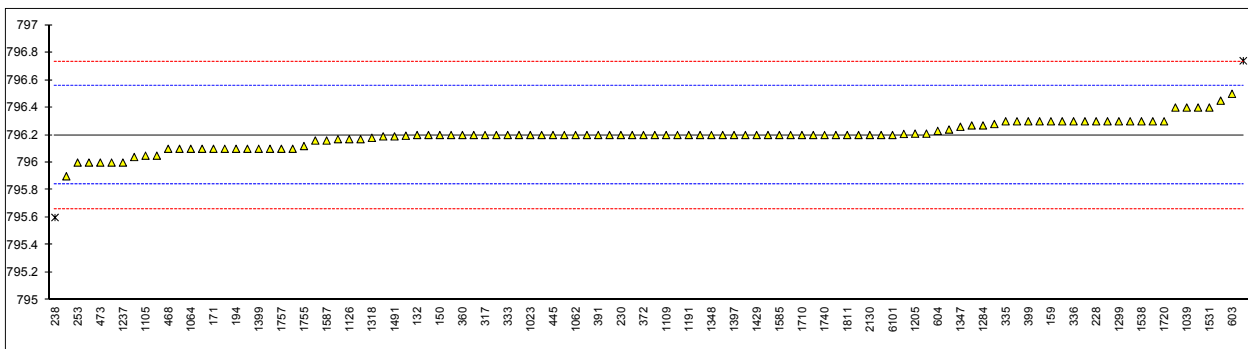
Determination of Distillation ASTM D86 on sample #17030; results in °C

| lab | method | IBP | mark | 10% rec | mark | 50% rec | mark | 90% rec | mark | FBP | mark |
|-----|--------|-----|------|---------|------|---------|------|---------|------|-----|------|
| 120 | D86-A | 147.6 | | 167.4 | | 198.0 | | 243.9 | | 269.3 | |
| 131 | D86-A | 149.4 | | 169.0 | | 199.3 | | 245.2 | | 269.5 | |
| 132 | D86-A | 149.6 | | 169.6 | | 199.0 | | 244.2 | | 269.4 | |
| 140 | D86-A | 144.0 | | 168.5 | | 199.0 | | 243.1 | | 269.4 | |
| 150 | D86-A | 147.0 | | 168.9 | | 198.8 | | 245.0 | | 269.7 | |
| 158 | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 159 | D86-A | 152.4 | | 169.6 | | 199.9 | | 245.9 | | 273.5 | |
| 169 | D86-A | 147.7 | | 169.4 | | 198.7 | | 243.4 | | 269.5 | |
| 171 | D86-A | 149.2 | | 168.9 | | 196.6 | | 242.7 | | 268.3 | |
| 175 | D86-A | 146.4 | | 169.0 | | 199.6 | | 246.8 | | 272.7 | |
| 177 | D86-A | 141.9 | | 168.5 | | 199.9 | | 245.5 | | 273.5 | |
| 194 | D86-A | 144.7 | | 168.5 | | 198.4 | | 242.6 | | 271.3 | |
| 228 | D86 | 145.0 | | 167.0 | | 196.0 | | 240.0 | R(0.05) | 270.0 | |
| 230 | D86-A | 149.0 | | 169.0 | | 197.8 | | 245.1 | | 270.1 | |
| 237 | D86-M | 149.0 | | 168.0 | | 198.0 | | 243.5 | | 270.0 | |
| 238 | D86-M | 146.0 | | 168.0 | | 196.0 | | 240.5 | | 269.5 | |
| 253 | D86-M | 144.0 | | 168.5 | | 198.0 | | 242.0 | | 270.5 | |
| 273 | D86-A | 149.8 | | 168.2 | | 199.4 | | 244.3 | | 273.6 | |
| 317 | D86-A | 143.3 | | 168.3 | | 199.1 | | 243.8 | | 269.2 | |
| 323 | D86-A | 147.8 | | 168.5 | | 198.9 | | 243.7 | | 269.0 | |
| 333 | D86-A | 149.3 | | 169.3 | | 198.9 | | 243.3 | | 272.5 | |
| 334 | D86-A | 150.5 | | 168.1 | | 198.1 | | 246.7 | | 272.9 | |
| 335 | D86-A | 147.3 | | 168.9 | | 199.0 | | 246.4 | | 269.8 | |
| 336 | D86-A | 150.1 | | 169.5 | | 199.6 | | 244.7 | | 270.9 | |
| 353 | IP123-A | 150.5 | | 169.3 | | 199.6 | | 246.3 | | 273.7 | |
| 360 | D86-A | 148.1 | | 170.4 | | 200.1 | | 246.0 | | 270.7 | |
| 372 | D86-A | 147.6 | | 169.5 | | 199.1 | | 244.7 | | 271.0 | |
| 391 | D86-A | 148.0 | | 168.4 | | 199.7 | | 244.6 | | 273.4 | |
| 398 | D86-A | 152.0 | | 170.0 | | 199.3 | | 244.0 | | 270.8 | |
| 399 | D86-A | 148.9 | | 170.1 | | 199.6 | | 243.2 | | 271.0 | |
| 445 | IP123-A | 143.3 | | 167.7 | | 198.6 | | 244.4 | | 270.7 | |
| 447 | D86-A | 140.7 | | 167.7 | | 198.0 | | 245.2 | | 270.1 | |
| 463 | D86-A | 150.6 | | 169.8 | | 199.0 | | 243.5 | | 273.2 | |
| 468 | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 473 | | 148.4 | | 168.8 | | 198.9 | | 244.2 | | 272.3 | |
| 603 | D86-A | 151.3 | | 170.4 | | 200.2 | | 244.7 | | 273.0 | |
| 604 | D86-A | 143.8 | | 166.8 | | 196.8 | | 241.8 | | 267.8 | |
| 608 | D86-M | 149.0 | | 170.0 | | 201.0 | | 245.0 | | 272.0 | |
| 631 | D86-A | 148.4 | | 168.7 | | 198.0 | | 245.6 | | 269.4 | |
| 663 | D86-A | 143.15 | | 169.25 | | 199.80 | | 246.20 | | 272.50 | |
| 671 | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 824 | D86-A | 149.9 | | 169.8 | | 199.5 | | 244.8 | | 274.0 | |
| 825 | D86-A | 148.3 | | 169.4 | | 199.2 | | 244.3 | | 271.0 | |
| 904 | D86-A | 146.0 | | 166.8 | | 197.1 | | 241.9 | | 268.8 | |
| 962 | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 963 | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 974 | D86-A | 147.1 | | 167.4 | | 197.3 | | 242.0 | | 269.9 | |
| 998 | D86-M | 147.5 | | 169.5 | | 198.0 | | 243.5 | | 274.0 | |
| 1006 | D86-A | 151.3 | | 170.7 | | 199.9 | C | 244.9 | C | 272.4 | C |
| 1023 | D86-A | 150.6 | | 170.9 | | 199.9 | | 244.3 | | 273.6 | |
| 1039 | D2887 | 146.7 | | 168.7 | | 200.3 | | 243.4 | | 272.9 | |
| 1049 | D86-A | 149.3 | | 169.8 | | 199.3 | | 244.0 | | 273.0 | |
| 1059 | D86-A | 145.6 | | 169.0 | | 198.2 | | 242.7 | | 270.1 | |
| 1062 | D86-A | 145.2 | | 169.7 | | 200.0 | | 244.4 | | 270.5 | |
| 1064 | D86-A | 148.9 | | 169.9 | | 200.4 | | 246.7 | | 273.3 | |
| 1080 | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1082 | D86-A | 146.7 | | 170.5 | | 199.8 | | 244.8 | | 272.2 | |
| 1097 | ISO3405-A | 149.9 | | 168.9 | | 199.4 | | 245.0 | | 271.7 | |
| 1105 | D86-A | 146.9 | | 168.6 | | 198.5 | | 240.5 | | 269.3 | |
| 1109 | D86-A | 146.4 | | 168.0 | | 198.2 | | 243.5 | | 270.8 | |
| 1121 | D86-M | 142.5 | | 166.5 | | 197.0 | | 241.5 | | 268.0 | |
| 1126 | | 146.6 | | 170.0 | | 202.1 | | 244.8 | | 273.6 | |
| 1146 | ISO3405-A | 145.9 | | 169.0 | | 199.2 | | 244.4 | | 270.7 | |
| 1150 | ISO3405-A | 150.0 | | 170.4 | | 199.1 | | 243.4 | | 277.2 | |
| 1155 | ISO3405-A | 148.8 | | 169.1 | | 198.2 | | 242.6 | | 270.2 | |
| 1161 | ISO3405-A | 143.6 | | 169.4 | | 199.9 | | 244.1 | | 271.3 | |
| 1191 | D86-A | 143.8 | | 170.7 | | 199.5 | | 243.1 | | 271.5 | |
| 1205 | D86-A | 151.2 | | 170.4 | | 200.4 | | 244.7 | | 272.1 | |
| 1212 | D86-A | 147.1 | | 168.5 | | 199.2 | | 245.8 | | 272.5 | |
| 1237 | ISO3405-M | 152.4 | | 168.4 | | 198.3 | | 243.3 | | 271.2 | |
| 1284 | D86-A | 147.7 | | 168.4 | | 197.9 | | 243.5 | | 272.1 | |
| 1297 | D86-A | 146.0 | | 168.8 | | 198.3 | | 241.7 | | 269.8 | |
| 1299 | D86-A | 147.8 | | 169.1 | | 199.3 | | 245.1 | | 272.8 | |
| 1318 | D86-A | 144.6 | | 169.0 | | 198.8 | | 243.4 | | 270.4 | |

| lab | method | IBP | mark | 10% rec | mark | 50% rec | mark | 90% rec | mark | FBP | mark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1347 | D86-M | 150.8 | | 169.8 | | 199.28 | | 242.8 | | 271.75 | |
| 1348 | D86-A | 146.1 | | 170 | | 198 | | 242.5 | | 269 | |
| 1372 | D86-M | 146 | | 167 | | 198 | | 243 | | 271 | |
| 1376 | D86-A | 148.2 | | 169.4 | | 198.9 | | 243.7 | | 272.4 | |
| 1379 | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1397 | D86-A | 145.6 | | 168.8 | | 198.5 | | 242.2 | | 270.2 | |
| 1399 | D86-A | 145.0 | | 167.5 | | 198.1 | | 245.3 | | 268.9 | |
| 1412 | D86-M | 149.5 | | 168.5 | | 198.0 | | 242.5 | | 266.0 | |
| 1429 | D86-A | 144.8 | | 167.6 | | 197.6 | | 242.8 | | 268.1 | |
| 1491 | D86-A | 148.3 | | 169.6 | | 199.6 | | 245.6 | | 273.5 | |
| 1496 | D86-A | 147.6 | | 171.6 | | 200.6 | | 246.7 | | 272.1 | |
| 1498 | D86-A | 145.8 | | 169.1 | | 199.9 | | 246.3 | | 273.8 | |
| 1528 | D86-A | 150.7 | | 169.9 | | 200.0 | | 245.6 | | 272.4 | |
| 1531 | D86-A | 147.5 | | 168.5 | | 200.0 | | 245.4 | | 273.1 | |
| 1538 | D86-A | 146.9 | | 168.0 | | 197.7 | | 241.5 | | 269.3 | |
| 1585 | D86-A | 147.5 | | 169.5 | | 199.3 | | 242.0 | | 272.4 | |
| 1586 | D86-A | 146.7 | | 169.1 | | 198.8 | | 246.2 | | 271.4 | |
| 1587 | D86-A | 146.1 | | 169.3 | | 199.5 | | 243.2 | | 270.6 | |
| 1610 | D86-A | 146.1 | | 168.2 | | 198.3 | | 244.2 | | 269.8 | |
| 1631 | D86-A | 149.7 | | 169.8 | | 199.5 | | 244.4 | | 273.3 | |
| 1634 | D86-A | 145.2 | | 169.8 | | 199.1 | | 245.5 | | 271.2 | |
| 1710 | D86-A | 148.9 | | 170.1 | | 199.7 | | 245.3 | | 271.6 | |
| 1720 | D86-A | 141.2 | | 169.0 | | 199.7 | | 243.4 | | 273.9 | |
| 1724 | D86-A | 146.4 | | 168.8 | | 199.4 | | 244 | | 271.3 | |
| 1740 | D86-A | 150.1 | | 170.2 | | 199.1 | | 243.9 | | 269.7 | |
| 1755 | D86-A | 145.5 | | 169.0 | | 199.0 | | 245.5 | | 269.3 | |
| 1757 | D86-A | 146.6 | | 168.8 | | 198.9 | | 246.0 | | 268.8 | |
| 1776 | D86-A | 141.4 | | 168.4 | | 198.9 | | 245.1 | | 270.4 | |
| 1810 | D86-A | 146.1 | | 167.6 | | 197.0 | | 242.0 | | 267.8 | |
| 1811 | D86-A | 145.9 | | 167.8 | | 197.4 | | 242.6 | | 269.1 | |
| 1883 | D86-M | 150 | | 166 | | 198 | | 243 | | 270 | |
| 2129 | D86-A | 144.9 | | 169.0 | | 198.4 | | 243.7 | | 269.9 | |
| 2130 | IP123-A | 150.2 | | 170.3 | | 199.7 | | 244.8 | | 272.0 | |
| 6049 | D86-A | 149.6 | | 168.5 | | 198.0 | | 244.3 | | 269.9 | |
| 6075 | D86-A | 145.2 | | 167.7 | | 198.8 | | 244.1 | | 273.6 | |
| 6101 | D86-A | 149.0 | | 168.9 | | 199.3 | | 244.2 | | 271.8 | |
| 6103 | ISO3405-A | 147.65 | | 169.1 | | 198.95 | | 245.5 | | 270.45 | |
| 6108 | | ----- | | | | ----- | | ----- | | ----- | |
| | normality | OK | | OK | | OK | | OK | | OK | |
| | n | 104 | | 104 | | 104 | | 103 | | 104 | |
| | outliers | 0 | | 0 | | 0 | | 1 | | 0 | |
| | mean (n) | 147.33 | | 168.95 | | 198.89 | | 244.10 | | 271.12 | |
| | st.dev. (n) | 2.559 | | 1.015 | | 1.024 | | 1.416 | | 1.824 | |
| | R(calc.) | 7.16 | | 2.84 | | 2.87 | | 3.97 | | 5.11 | |
| | R(D86:16a-A) | 8.10 | | 3.72 | | 3.0 | | 3.66 | | 7.1 | |
| Comp. | R(D86:16a-M) | 4.81 | | 3.17 | | 3.05 | | 3.72 | | 4.23 | |

-A is mode automated
-M is mode manual

Lab 1006 first reported: 278.6; 279.0; 281.7 respectively for T at 50% rec. T at 90% rec. and FBP.

Initial Boiling Point / °C — Kernel Density



T at 10% recovered / °C — Kernel Density



T at 50% recovered / °C — Kernel Density



T at 90% recovered / °C — Kernel Density



Final Boiling Point / °C — Kernel Density
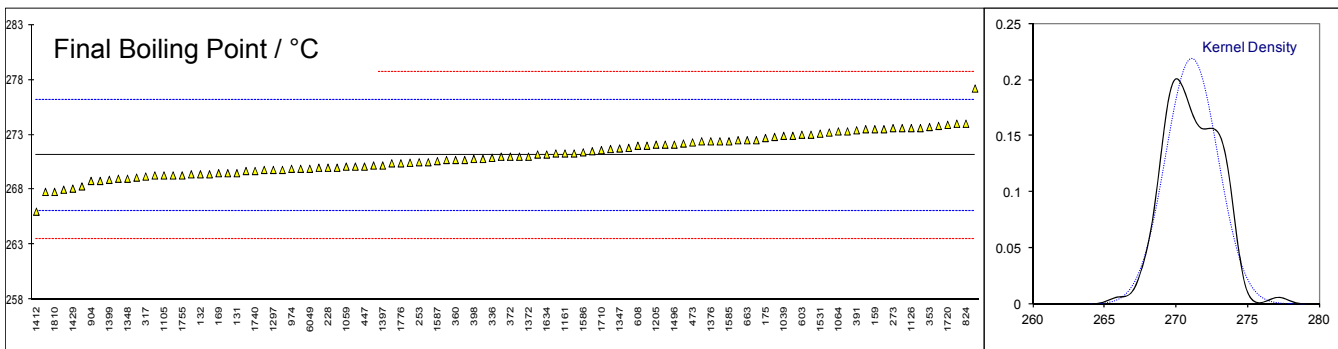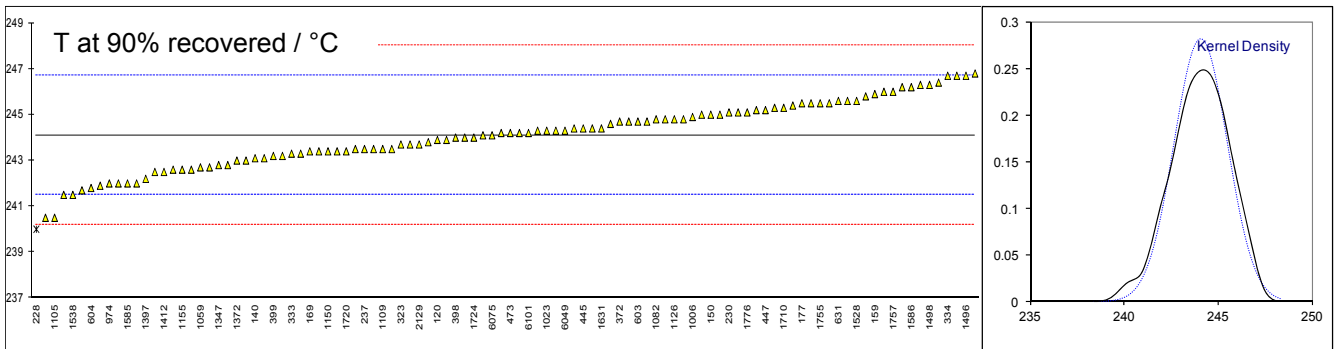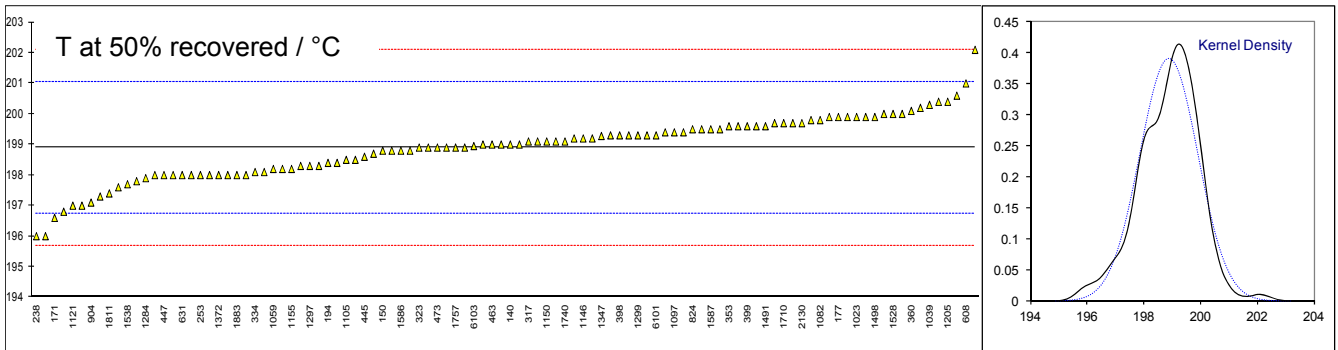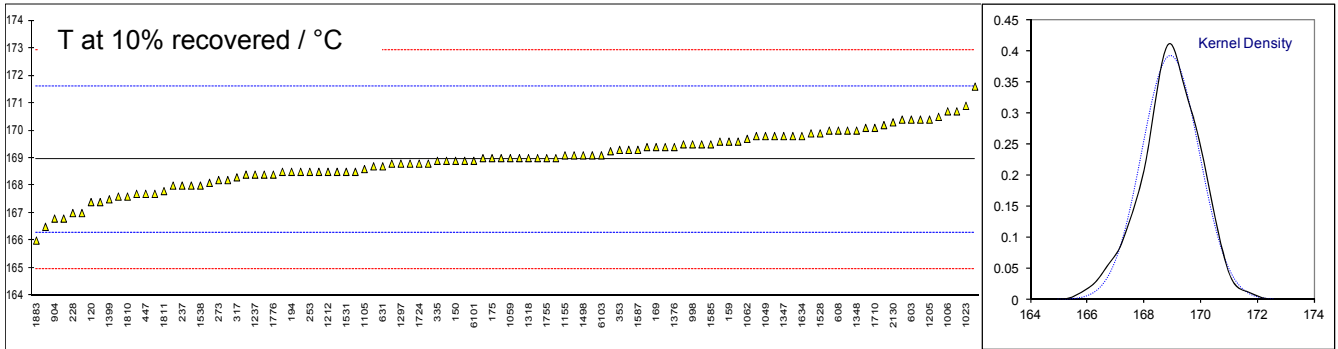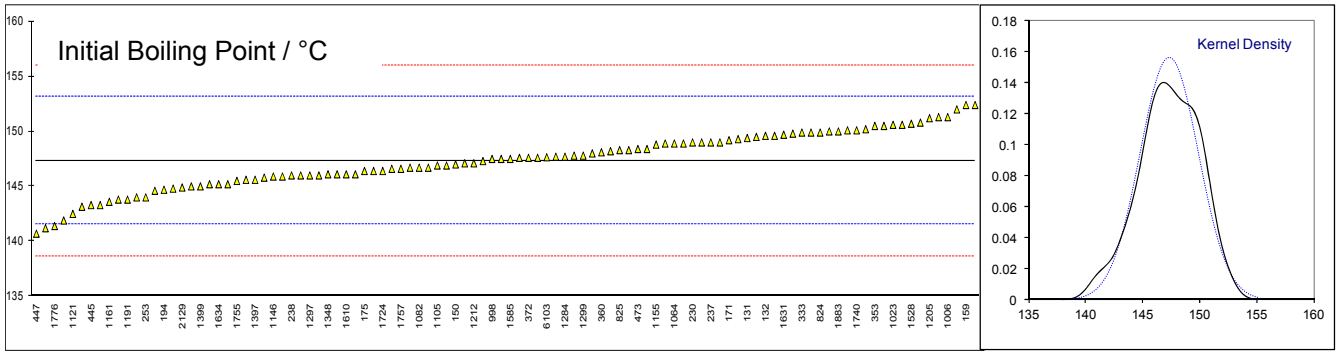
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Determination of Existent Gum (unwashed) on sample #17030; results in mg/100mL

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | IP540 | 1.0 | | 0.21 | |
| 131 | | ----- | | ----- | |
| 132 | D381 | 3 | R(0.01) | 1.98 | |
| 140 | D381 | 1 | | 0.21 | |
| 150 | D381 | 2 | | 1.09 | |
| 158 | | ----- | | ----- | |
| 159 | D381 | 1.0 | | 0.21 | |
| 169 | D381 | 0.2 | | -0.50 | |
| 171 | D381 | <1 | | ----- | |
| 175 | D381 | <1 | | ----- | |
| 177 | D381 | 2 | | 1.09 | |
| 194 | D381 | <1 | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | IP540 | 0.6 | | -0.15 | |
| 237 | D381 | 1.0 | | 0.21 | |
| 238 | | ----- | | ----- | |
| 253 | IP540 | <1 | | ----- | |
| 273 | D381 | <1 | | ----- | |
| 317 | D381 | <1 | | ----- | |
| 323 | D381 | 2.5 | R(0.05) | 1.54 | |
| 333 | | ----- | | ----- | |
| 334 | D381 | 2.0 | | 1.09 | |
| 335 | D381 | <0.5 | | ----- | |
| 336 | | ----- | | ----- | |
| 353 | IP540 | 0.2 | | -0.50 | |
| 360 | D381 | 0.8 | | 0.03 | |
| 372 | IP540 | 1 | | 0.21 | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 399 | D381 | 1.6 | | 0.74 | |
| 445 | IP540 | <0.5 | | ----- | |
| 447 | IP540 | 1 | | 0.21 | |
| 463 | IP540 | 0.6 | | -0.15 | |
| 468 | IP540 | 1.2 | | 0.38 | |
| 473 | D381 | 0.034 | | -0.65 | |
| 603 | D381 | 0.4 | | -0.33 | |
| 604 | | ----- | | ----- | |
| 608 | D381 | <0.1 | | ----- | |
| 631 | IP540 | 0.5 | | -0.24 | |
| 663 | D381 | 1.10 | | 0.30 | |
| 671 | D381 | 0.6 | | -0.15 | |
| 824 | D381 | 0.4 | | -0.33 | |
| 825 | D381 | <1 | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | IP540 | 1 | | 0.21 | |
| 998 | D381 | 0.9 | | 0.12 | |
| 1006 | D381 | <1.0 | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | IP540 | <1 | | ----- | |
| 1049 | D381 | 0.2 | | -0.50 | |
| 1059 | D381Mod. | 1 | | 0.21 | |
| 1062 | D381 | 0 | | -0.68 | |
| 1064 | D381 | 0.0 | | -0.68 | |
| 1080 | ISO6246 | 1 | | 0.21 | |
| 1082 | IP540 | 0.4 | | -0.33 | |
| 1097 | IP540 | 0.3 | | -0.41 | |
| 1105 | D381 | 0.6 | | -0.15 | |
| 1109 | IP540 | 0.6 | | -0.15 | |
| 1121 | | ----- | | ----- | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | ISO6246 | 0.8 | | 0.03 | |
| 1155 | ISO6246 | 0.5 | | -0.24 | |
| 1161 | | ----- | | ----- | |
| 1191 | IP540 | 0.94 | | 0.15 | |
| 1205 | | ----- | | ----- | |
| 1212 | D381 | 0.4 | | -0.33 | |
| 1237 | | ----- | | ----- | |
| 1284 | D381 | 0.6 | | -0.15 | |
| 1297 | | ----- | | ----- | |
| 1299 | D381 | 0.4 | | -0.33 | |
| 1318 | IP540 | 0.1 | | -0.59 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D381 | < 1 | | ----- | |
| 1348 | D381 | < 1 | | ----- | |
| 1372 | IP540 | 1.0 | | 0.21 | |
| 1376 | D381 | 1.2 | | 0.38 | |
| 1379 | | ----- | | ----- | |
| 1397 | | ----- | | ----- | |
| 1399 | | ----- | | ----- | |
| 1412 | D381 | 0.85 | | 0.07 | |
| 1429 | | ----- | | ----- | |
| 1491 | D381 | 0.6 | | -0.15 | |
| 1496 | D381 | 0.5 | | -0.24 | |
| 1498 | | ----- | | ----- | |
| 1528 | IP540 | 0.4 | | -0.33 | |
| 1531 | | ----- | | ----- | |
| 1538 | D381 | 1 | | 0.21 | |
| 1585 | | ----- | | ----- | |
| 1586 | D381 | 3 | R(0.01) | 1.98 | |
| 1587 | IP540 | 0.6 | | -0.15 | |
| 1610 | IP540 | < 1 | | ----- | |
| 1631 | IP540 | 1.0 | | 0.21 | |
| 1634 | D381 | 0.15 | | -0.55 | |
| 1710 | IP540 | 1.0 | | 0.21 | |
| 1720 | | ----- | | ----- | |
| 1724 | D381 | 1.2 | | 0.38 | |
| 1740 | | ----- | | ----- | |
| 1755 | D381 | 0.69 | | -0.07 | |
| 1757 | | ----- | | ----- | |
| 1776 | IP540 | 2 | | 1.09 | |
| 1810 | D381 | 0.4 | | -0.33 | |
| 1811 | D381 | 0.4 | | -0.33 | |
| 1883 | D381 | 0.6 | | -0.15 | |
| 2129 | D381 | 0.4 | | -0.33 | |
| 2130 | IP540 | 1 | | 0.21 | |
| 6049 | IP540 | 3.3 | R(0.01) | 2.25 | |
| 6075 | ISO6246 | 1 | | 0.21 | |
| 6101 | D381 | 1.2 | | 0.38 | |
| 6103 | ISO6246 | 0.35 | | -0.37 | |
| 6108 | | ----- | | ----- | |

| | | |
|---|---|---|
| normality | OK | |
| n | 62 | |
| outliers | 4 | |
| mean (n) | 0.766 | |
| st.dev. (n) | 0.4805 | |
| R(calc.) | 1.345 | |
| R(D381:12) | 3.155 | |
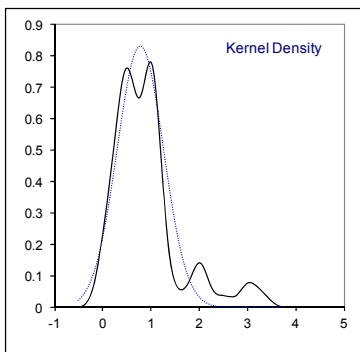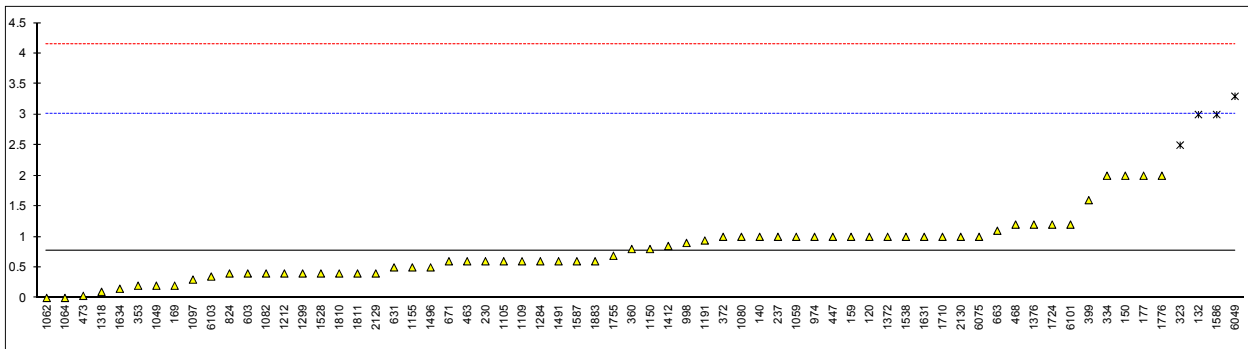
## Determination of Flash Point on sample #17030; results in °C

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | | ----- | | ----- | |
| 131 | D56 | 42.0 | | 1.22 | |
| 132 | D56 | 41.0 | | 0.35 | |
| 140 | D56 | 41.0 | | 0.35 | |
| 150 | D56 | 42.0 | | 1.22 | |
| 158 | | ----- | | ----- | |
| 159 | D56 | 39 | C | -1.40 | first reported: 45 |
| 169 | D56 | 40.8 | | 0.17 | |
| 171 | D56 | 40.5 | | -0.09 | |
| 175 | D56 | 42.0 | | 1.22 | |
| 177 | D56 | 41.5 | | 0.79 | |
| 194 | | ----- | | ----- | |
| 228 | IP523 | 40.0 | | -0.53 | |
| 230 | IP170 | 40.0 | | -0.53 | |
| 237 | IP170 | 39.0 | | -1.40 | |
| 238 | IP170 | 41.0 | | 0.35 | |
| 253 | IP170 | 40.5 | | -0.09 | |
| 273 | IP170 | 40.5 | | -0.09 | |
| 317 | IP170 | 40.5 | | -0.09 | |
| 323 | IP170 | 41.0 | | 0.35 | |
| 333 | IP170 | 40.0 | | -0.53 | |
| 334 | IP170 | 40.0 | | -0.53 | |
| 335 | IP170 | 40.5 | | -0.09 | |
| 336 | | ----- | | ----- | |
| 353 | IP170 | 39.875 | | -0.63 | |
| 360 | D56 | 40.0 | | -0.53 | |
| 372 | IP170 | 40.5 | | -0.09 | |
| 391 | IP170 | 40 | | -0.53 | |
| 398 | IP170 | 41.0 | | 0.35 | |
| 399 | IP170 | 40 | | -0.53 | |
| 445 | IP170 | 40.2 | | -0.35 | |
| 447 | IP170 | 41.0 | | 0.35 | |
| 463 | IP170 | 40.43 | | -0.15 | |
| 468 | IP170 | 39.0 | | -1.40 | |
| 473 | IP170 | 40.5 | | -0.09 | |
| 603 | IP170 | 41.5 | | 0.79 | |
| 604 | IP170 | 42.0 | | 1.22 | |
| 608 | IP170 | 40.0 | | -0.53 | |
| 631 | D56 | 42.5 | | 1.66 | |
| 663 | D56 | 39.3 | | -1.14 | |
| 671 | IP170 | 40 | | -0.53 | |
| 824 | IP170 | 39.5 | | -0.96 | |
| 825 | IP170 | 40.0 | | -0.53 | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | IP170 | 40.0 | | -0.53 | |
| 998 | IP170 | 41.5 | | 0.79 | |
| 1006 | D56 | 40.0 | | -0.53 | |
| 1023 | ISO13736 | 40.5 | | -0.09 | |
| 1039 | IP170 | 41.0 | | 0.35 | |
| 1049 | ISO13736 | 40.5 | | -0.09 | |
| 1059 | IP170 | 42.0 | | 1.22 | |
| 1062 | IP170 | 39.5 | | -0.96 | |
| 1064 | IP170 | 41.0 | | 0.35 | |
| 1080 | | ----- | | ----- | |
| 1082 | IP170 | 41.5 | | 0.79 | |
| 1097 | ISO13736 | 40.9 | | 0.26 | |
| 1105 | IP170 | 38.9 | | -1.49 | |
| 1109 | IP170 | 41.0 | | 0.35 | |
| 1121 | IP170 | 40.5 | | -0.09 | |
| 1126 | ISO2719 | 42.5 | | 1.66 | |
| 1146 | IP170 | 41.0 | | 0.35 | |
| 1150 | D56 | 40.6 | | 0.00 | |
| 1155 | ISO13736 | 40.5 | | -0.09 | |
| 1161 | | ----- | | ----- | |
| 1191 | IP170 | 42.0 | | 1.22 | |
| 1205 | D93 | 42.0 | | 1.22 | |
| 1212 | IP170 | 40.5 | | -0.09 | |
| 1237 | | ----- | | ----- | |
| 1284 | IP170 | 39.5 | | -0.96 | |
| 1297 | D56 | 41 | | 0.35 | |
| 1299 | IP170 | 41.5 | | 0.79 | |
| 1318 | IP170 | 40.0 | | -0.53 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | IP170 | 41.0 | | 0.35 | |
| 1348 | IP170 | 41.0 | | 0.35 | |
| 1372 | IP170 | 40.0 | | -0.53 | |
| 1376 | D56 | 41.5 | | 0.79 | |
| 1379 | | ----- | | ----- | |
| 1397 | D56 | 39.1 | | -1.31 | |
| 1399 | IP170 | 43.5 | | 2.54 | |
| 1412 | D93A | 41.0 | | 0.35 | |
| 1429 | D56 | 39.0 | | -1.40 | |
| 1491 | IP170 | 40.0 | | -0.53 | |
| 1496 | IP170 | 39.0 | | -1.40 | |
| 1498 | D56 | 41.5 | | 0.79 | |
| 1528 | D56 | 41.0 | | 0.35 | |
| 1531 | D93 | 43 | | 2.10 | |
| 1538 | D56 | 41.0 | | 0.35 | |
| 1585 | IP170 | 40.5 | | -0.09 | |
| 1586 | IP170 | 40.5 | | -0.09 | |
| 1587 | IP170 | 39.5 | | -0.96 | |
| 1610 | IP170 | 41.5 | | 0.79 | |
| 1631 | IP170 | 40.5 | | -0.09 | |
| 1634 | IP170 | 39.7 | | -0.79 | |
| 1710 | D56 | 40.5 | | -0.09 | |
| 1720 | D3828 | 38.0 | | -2.28 | |
| 1724 | IP170 | 40.5 | | -0.09 | |
| 1740 | IP170 | 40.5 | | -0.09 | |
| 1755 | D56 | 40.8 | | 0.17 | |
| 1757 | D56 | 40.9 | | 0.26 | |
| 1776 | IP170 | 41.0 | | 0.35 | |
| 1810 | D56 | 45.5 | R(0.01) | 4.29 | |
| 1811 | D56 | 40.7 | | 0.09 | |
| 1883 | D3828 | 41 | | 0.35 | |
| 2129 | IP170 | 39.5 | | -0.96 | |
| 2130 | IP170 | 41.0 | | 0.35 | |
| 6049 | IP170 | 41.0 | | 0.35 | |
| 6075 | IP170 | 38.5 | | -1.84 | |
| 6101 | IP170 | 40.7 | | 0.09 | |
| 6103 | ISO13736 | 41.0 | | 0.35 | |
| 6108 | | ----- | | ----- | |

| | | |
|---|---|---|
| normality | OK | |
| n | 99 | |
| outliers | 1 | |
| mean (n) | 40.600 | |
| st.dev. (n) | 0.9540 | |
| R(calc.) | 2.671 | |
| R(IP170:14) | 3.2 | |
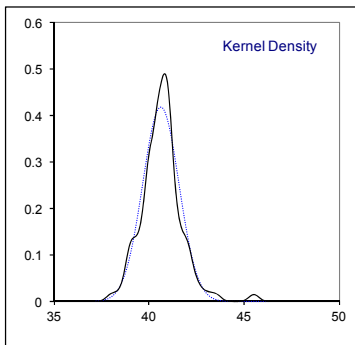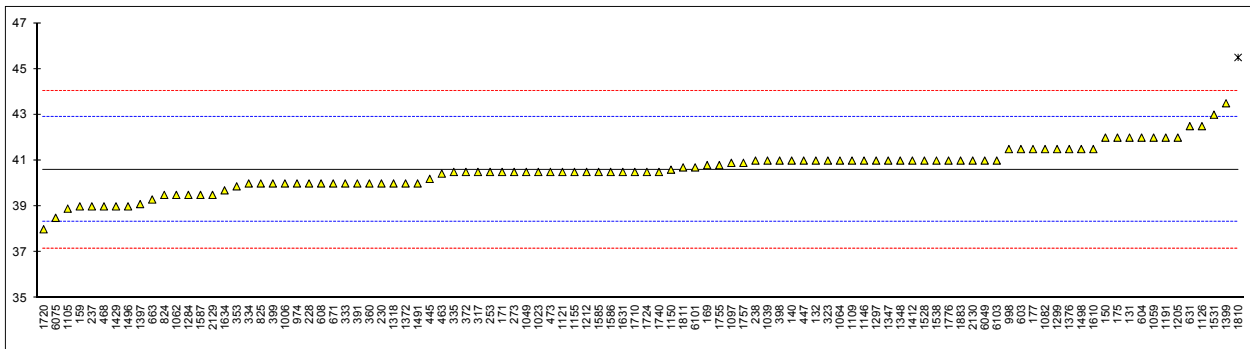
## Determination of Freezing Point on sample #17030; results in °C

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D2386 | -54.5 | | -0.83 | |
| 131 | | ----- | | ----- | |
| 132 | D2386 | -54.5 | | -0.83 | |
| 140 | D5972 | -53.9 | | -0.16 | |
| 150 | D7153 | -54.0 | | -0.27 | |
| 158 | | ----- | | ----- | |
| 159 | D2386 | -54.5 | | -0.83 | |
| 169 | D2386 | -55.0 | | -1.39 | |
| 171 | D2386 | -55.0 | | -1.39 | |
| 175 | D2386 | -53 | | 0.85 | |
| 177 | D2386 | -55.0 | | -1.39 | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | D2386 | -53.30 | | 0.51 | |
| 237 | D2386 | -52.0 | | 1.97 | |
| 238 | | ----- | | ----- | |
| 253 | D2386 | -54.5 | | -0.83 | |
| 273 | | ----- | | ----- | |
| 317 | D5972 | -53.8 | | -0.05 | |
| 323 | D2386 | -54.0 | | -0.27 | |
| 333 | IP529 | -53.5 | | 0.29 | |
| 334 | IP529 | -53.3 | | 0.51 | |
| 335 | IP529 | -53.7 | | 0.07 | |
| 336 | | ----- | | ----- | |
| 353 | IP16 | -53.57 | | 0.21 | |
| 360 | D2386 | -53.7 | | 0.07 | |
| 372 | D2386 | -53.5 | | 0.29 | |
| 391 | D2386 | -53.5 | | 0.29 | |
| 398 | D2386 | -52.0 | | 1.97 | |
| 399 | D7153 | -54.1 | | -0.38 | |
| 445 | IP529 | -53.5 | | 0.29 | |
| 447 | IP16 | -53.0 | | 0.85 | |
| 463 | D2386 | -54.5 | | -0.83 | |
| 468 | D2386 | -53.0 | | 0.85 | |
| 473 | D2386 | -53.0 | | 0.85 | |
| 603 | D2386 | -53.0 | | 0.85 | |
| 604 | | ----- | | ----- | |
| 608 | D2386 | -55.0 | | -1.39 | |
| 631 | D2386 | -56.5 | R(0.05) | -3.07 | |
| 663 | D2386 | -57 | R(0.01) | -3.63 | |
| 671 | D2386 | -53.5 | | 0.29 | |
| 824 | D2386 | -53.0 | | 0.85 | |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D2386 | -55.5 | | -1.95 | |
| 998 | D2386 | -53.5 | | 0.29 | |
| 1006 | | ----- | | ----- | |
| 1023 | D7153 | -53.4 | C | 0.40 | first reported: 53.4 |
| 1039 | IP529 | -53.6 | | 0.18 | |
| 1049 | D7153 | -53.8 | | -0.05 | |
| 1059 | D2386 | -52.5 | | 1.41 | |
| 1062 | D2386 | -53.6 | | 0.18 | |
| 1064 | D7153 | -53.80 | | -0.05 | |
| 1080 | | ----- | | ----- | |
| 1082 | IP529 | -53.9 | | -0.16 | |
| 1097 | IP529 | -53.0 | | 0.85 | |
| 1105 | D7153 | -53.7 | | 0.07 | |
| 1109 | D5972 | -54.8 | | -1.17 | |
| 1121 | D2386 | -53.5 | C | 0.29 | first reported: -58.5 |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | D2386 | -53 | | 0.85 | |
| 1155 | ISO3013 | -55.5 | | -1.95 | |
| 1161 | | ----- | | ----- | |
| 1191 | IP529 | -54.2 | | -0.49 | |
| 1205 | | ----- | | ----- | |
| 1212 | D2386 | -54.5 | | -0.83 | |
| 1237 | | ----- | | ----- | |
| 1284 | D7153 | -53.8 | | -0.05 | |
| 1297 | D5972 | -54.1 | | -0.38 | |
| 1299 | D2386 | -54.5 | | -0.83 | |
| 1318 | D7153 | -53.2 | | 0.63 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D2386 | -54.0 | | -0.27 | |
| 1348 | D2386 | -53.0 | | 0.85 | |
| 1372 | D7153 | -53.7 | | 0.07 | |
| 1376 | D7153 | -54.0 | | -0.27 | |
| 1379 | | ----- | | ----- | |
| 1397 | D7153 | -53.9 | | -0.16 | |
| 1399 | | ----- | | ----- | |
| 1412 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1491 | D2386 | -54.0 | | -0.27 | |
| 1496 | D5972 | -52.9 | | 0.96 | |
| 1498 | | ----- | | ----- | |
| 1528 | D7153 | -53.7 | | 0.07 | |
| 1531 | | ----- | | ----- | |
| 1538 | D5972 | -54.6 | | -0.94 | |
| 1585 | D2386 | -53.75 | | 0.01 | |
| 1586 | D2386 | -53.0 | | 0.85 | |
| 1587 | IP529 | -53.7 | | 0.07 | |
| 1610 | D5972 | -54.4 | | -0.72 | |
| 1631 | D7153 | -53.7 | | 0.07 | |
| 1634 | D2386 | -54.0 | | -0.27 | |
| 1710 | D7153 | -53.6 | | 0.18 | |
| 1720 | D7153 | -54.1 | | -0.38 | |
| 1724 | D5972 | -53.7 | | 0.07 | |
| 1740 | D2386 | -54.5 | | -0.83 | |
| 1755 | D2386 | -53.40 | | 0.40 | |
| 1757 | D2386 | -53.0 | C | 0.85 | first reported: 53.0 |
| 1776 | IP529 | -53.2 | | 0.63 | |
| 1810 | D5972 | -54.7 | | -1.05 | |
| 1811 | D2386 | -53.5 | | 0.29 | |
| 1883 | D2386 | -55 | | -1.39 | |
| 2129 | D2386 | -53.0 | | 0.85 | |
| 2130 | IP16 | -53.1 | | 0.74 | |
| 6049 | D2386 | -53 | | 0.85 | |
| 6075 | IP529 | -53.0 | | 0.85 | |
| 6101 | D7153 | -53.8 | | -0.05 | |
| 6103 | D7153 | -54.1 | | -0.38 | |
| 6108 | | ----- | | ----- | |

|  |  |
|--|--|
| normality | OK |
| n | 84 |
| outliers | 2 |
| mean (n) | -53.760 |
| st.dev. (n) | 0.7055 |
| R(calc.) | 1.975 |
| R(D2386:15e1) | 2.5 |





Kernel Density
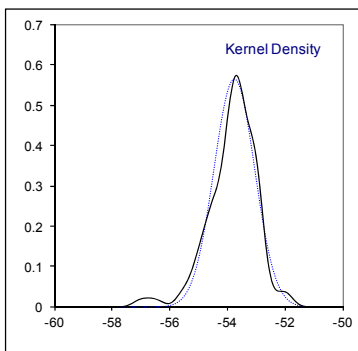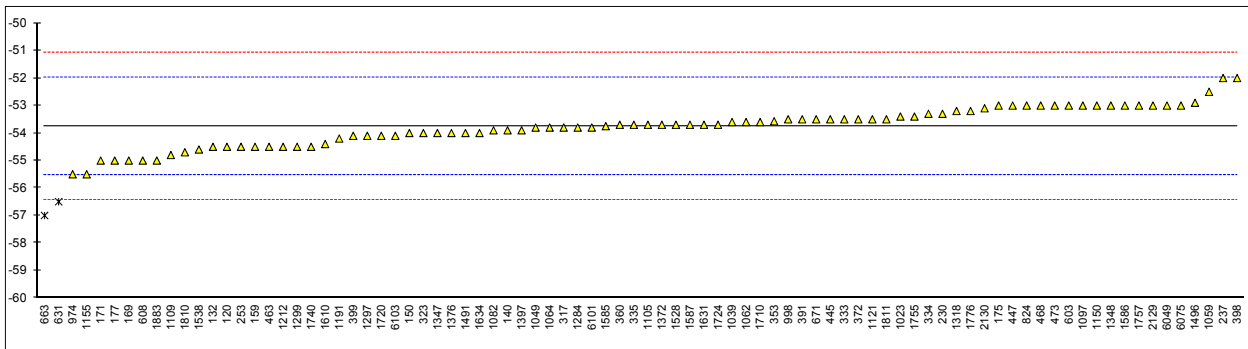
Determination of JFTOT at 260°C; Visual Tube Rating (VTR), Interferiometric Tube Rating (ITR) in nm, Elipsometric Tube Rating (ETR) in nm, Delta P in mmHg, Heater tube control temp. in °C on sample #17030

| lab | method | VTR | mark | method | ITR | mark | method | ETR | mark | method | Delta P | mark | Temp |
|-----|--------|-----|------|--------|-----|------|--------|-----|------|--------|---------|------|------|
| 120 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 131 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 132 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 140 | D3241 - A1 | 1 | | D3241 - A2 | 337.6 | | | ----- | | D3241 | 1 | | 260 |
| 150 | D3241 - A1 | 1 | | D3241 - A2 | 18 | | | ----- | | D3241 | 0 | | 260 |
| 158 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 159 | D3241 - A1 | 1 | | D3241 - A2 | 13.8 | | | ----- | | D3241 | 0.5 | | 260 |
| 169 | D3241 - A1 | 1 | | | ----- | | D3241 - A3 | 0.1 | | D3241 | 0 | | 260 |
| 171 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 175 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 177 | D3241 - A1 | 1 | | D3241 - A2 | 10.7 | | D3241 - A3 | 0.003150 | | D3241 | 0 | | 260 |
| 194 | D3241 - A1 | 0 | | | ----- | | | ----- | | D3241 | 1 | | 260 |
| 228 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 230 | D3241 | <1 | | | ----- | | | ----- | | D3241 | 0.5 | | 260 |
| 237 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 238 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 253 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 273 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 317 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 323 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | <1 | | 260 |
| 333 | | ----- | | D3241 - A2 | 8 | | | ----- | | D3241 | 0 | | 260 |
| 334 | D3241 - A1 | 0 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 335 | D3241 - A1 | <1 | | D3241 - A2 | 93.5 | | | ----- | | D3241 | 0 | | 260 |
| 336 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 353 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 360 | D3241 - A1 | 0 | | | ----- | | | ----- | | D3241 | 1 | | 260 |
| 372 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 391 | D3241 - A1 | 0 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 398 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 3.6 | f+, R(1) | 260 |
| 399 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 445 | IP323 - B | 1 | | | ----- | | | ----- | | IP323 | <1 | | 260 |
| 447 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 463 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 468 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 473 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 603 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 604 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 608 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 631 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | <1.0 | | 260 |
| 663 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 671 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 824 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 825 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 904 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 962 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 963 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 974 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 998 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1006 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1023 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1039 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0.2 | | 260 |
| 1049 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0.0 | | 260 |
| 1059 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1062 | D3241 - A1 | 0 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1064 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0.0 | | 260 |
| 1080 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1082 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1097 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0.0 | | 260 |
| 1105 | D3241 - A1 | 0 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1109 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0.0 | | 260 |
| 1121 | D3241 - A1 | <2 | | | ----- | | | ----- | | D3241 | 1 | | 260 |
| 1126 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1146 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0.1 | | 260 |
| 1150 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1155 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1161 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1191 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1205 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1212 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | <2 | | 260 |
| 1237 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0.0 | | 260 |
| 1284 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1297 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |

| lab | method | VTR | mark | method | ITR | mark | method | ETR | mark | method | Delta P | mark | Temp |
|-----|--------|-----|------|--------|-----|------|--------|-----|------|--------|---------|------|------|
| 1299 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1318 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0.0 | | 260 |
| 1347 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1348 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1372 | D3241 | 1 | | | ----- | | | ----- | | D3241 | 2 | R(0.01) | 260 |
| 1376 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0.0 | | 260 |
| 1379 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1397 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1399 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1412 | D3241 | 1 | | | ----- | | | ----- | | D3241 | 1 | | 260 |
| 1429 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1491 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1496 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1498 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1528 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 1 | | 260 |
| 1531 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1538 | D3241 - A1 | <1 | | D3241 - A2 | <1 | | D3241 - A3 | 3.32 | | D3241 | 0.1 | | 260 |
| 1585 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1586 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1587 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0.1 | | 260 |
| 1610 | IP323 - B | < 1 | | | ----- | | | ----- | | IP323 | < 1 | | 260 |
| 1631 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1634 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1710 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260 |
| 1720 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1724 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0.3 | | 260 |
| 1740 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1755 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1757 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1776 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1810 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1811 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 1883 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 2129 | IP323 - B | 1 | | | ----- | | | ----- | | IP323 | 0 | | 260 |
| 2130 | IP323 - B | 1 | | | ----- | | | ----- | | IP323 | 0 | | 260 |
| 6049 | D3241 - A1 | < 1 | | | ----- | | | ----- | | D3241 | zero | | 260 |
| 6075 | D3241 - A1 | 1 | | | ----- | | | ----- | | D3241 | 0 | | 260.0 |
| 6101 | D3241 - A1 | <1 | | | ----- | | | ----- | | D3241 | 0.2 | | 260 |
| 6103 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| 6108 | | ----- | | | ----- | | | ----- | | | ----- | | ----- |
| | | | | | | | | | | | | | |
| normality | | n.a. | | | n.a. | | | n.a. | | | n.a. | | |
| n | | 58 | | | 7 | | | 3 | | | 57 | | |
| outliers | | n.a. | | | n.a. | | | n.a. | | | 2 | | |
| mean (n) | | ≤ 1 | | | n.a. | | | n.a. | | | ≤ 1 | | |
| st.dev. (n) | | n.a. | | | n.a. | | | n.a. | | | n.a. | | |
| R(calc.) | | n.a. | | | n.a. | | | n.a. | | | n.a. | | |
| R(D3241:16a) | | unknown | | | unknown | | | unknown | | | unknown | | |

Lab 399: false positive test result?

Determination of Kinematic Viscosity at -20°C on sample #17030; results in mm$^2$/s

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D445 | 3.960 | | 0.11 | |
| 131 | | ----- | | ----- | |
| 132 | D445 | 3.904 | | -1.97 | |
| 140 | D445 | 3.965 | | 0.30 | |
| 150 | D445 | 3.954 | | -0.11 | |
| 158 | | ----- | | ----- | |
| 159 | D445 | 3.938 | | -0.71 | |
| 169 | D445 | 3.9190 | | -1.42 | |
| 171 | D445 | 3.965 | | 0.30 | |
| 175 | D445 | 3.949 | | -0.30 | |
| 177 | D445 | 3.984 | | 1.01 | |
| 194 | D445 | 3.924 | | -1.23 | |
| 228 | | ----- | | ----- | |
| 230 | D445 | 3.9661 | | 0.34 | |
| 237 | D445 | 3.979 | | 0.82 | |
| 238 | | ----- | | ----- | |
| 253 | D445 | 3.9871 | | 1.12 | |
| 273 | | ----- | | ----- | |
| 317 | | ----- | | ----- | |
| 323 | D445 | 3.937 | | -0.74 | |
| 333 | D445 | 3.984 | | 1.01 | |
| 334 | | ----- | | ----- | |
| 335 | D445 | 3.947 | | -0.37 | |
| 336 | | ----- | | ----- | |
| 353 | | ----- | | ----- | |
| 360 | D445 | 3.9753 | | 0.68 | |
| 372 | D445 | 3.956 | | -0.04 | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | IP71 | 3.9647 | | 0.29 | |
| 447 | D445 | 3.959 | | 0.07 | |
| 463 | | ----- | | ----- | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | D445 | 3.9741 | | 0.64 | |
| 663 | D445 | 3.9724 | | 0.57 | |
| 671 | | ----- | | ----- | |
| 824 | D445 | 3.950 | C | -0.26 | first reported: 1.866 |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D445 | 4.0112 | | 2.02 | |
| 998 | | ----- | | ----- | |
| 1006 | | ----- | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | ISO3104 | 3.995 | | 1.42 | |
| 1049 | D445 | 3.966 | | 0.34 | |
| 1059 | D445 | 3.940 | | -0.63 | |
| 1062 | D445 | 3.935 | | -0.82 | |
| 1064 | D445 | 3.9535 | | -0.13 | |
| 1080 | | ----- | | ----- | |
| 1082 | D445 | 3.9379 | | -0.71 | |
| 1097 | ISO3104 | 3.9741 | | 0.64 | |
| 1105 | D445 | 4.0327 | | 2.82 | |
| 1109 | D445 | 3.9349 | | -0.82 | |
| 1121 | | ----- | | ----- | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | ISO3104 | 3.97847 | | 0.80 | |
| 1155 | ISO3104 | 3.9493 | | -0.29 | |
| 1161 | | ----- | | ----- | |
| 1191 | D445 | 3.9185 | | -1.43 | |
| 1205 | | ----- | | ----- | |
| 1212 | D445 | 3.9443 | | -0.47 | |
| 1237 | | ----- | | ----- | |
| 1284 | | ----- | | ----- | |
| 1297 | | ----- | | ----- | |
| 1299 | D445 | 3.979 | | 0.82 | |
| 1318 | D7042 | 3.9281 | | -1.08 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D445 | 3.976 | | 0.71 | |
| 1348 | D445 | 3.88 | | -2.87 | |
| 1372 | D445 | 3.91395 | | -1.60 | |
| 1376 | D445 | 3.9647 | | 0.29 | |
| 1379 | | ----- | | ----- | |
| 1397 | D7042 | 3.945 | | -0.45 | |
| 1399 | D445 | 3.985 | | 1.04 | |
| 1412 | D445 | 3.986 | | 1.08 | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D445 | 3.923 | | -1.27 | |
| 1498 | | ----- | | ----- | |
| 1528 | D445 | 3.9994 | | 1.58 | |
| 1531 | | ----- | | ----- | |
| 1538 | D445 | 3.9650 | | 0.30 | |
| 1585 | D445 | 3.9682 | | 0.42 | |
| 1586 | D445 | 3.983 | | 0.97 | |
| 1587 | D445 | 3.91809 | | -1.45 | |
| 1610 | D7042 | 3.986 | | 1.08 | |
| 1631 | D445 | 3.977 | | 0.74 | |
| 1634 | IP71 | 3.944 | | -0.48 | |
| 1710 | D445 | 3.970 | | 0.48 | |
| 1720 | | ----- | | ----- | |
| 1724 | D445 | 3.958 | | 0.04 | |
| 1740 | | ----- | | ----- | |
| 1755 | D445 | 3.94105 | | -0.59 | |
| 1757 | | ----- | | ----- | |
| 1776 | D445 | 3.970 | | 0.48 | |
| 1810 | D445 | 3.888 | | -2.57 | |
| 1811 | D445 | 3.9466 | | -0.39 | |
| 1883 | | ----- | | ----- | |
| 2129 | D445 | 3.966 | | 0.34 | |
| 2130 | IP71 | 3.917 | | -1.49 | |
| 6049 | D445 | 3.994 | | 1.38 | |
| 6075 | D445 | 3.9965 | | 1.47 | |
| 6101 | D445 | 3.935 | | -0.82 | |
| 6103 | ISO3104 | 3.931 | | -0.97 | |
| 6108 | | ----- | | ----- | |

|  |  |
|--|--|
| normality | OK |
| n | 67 |
| outliers | 0 |
| mean (n) | 3.9570 |
| st.dev. (n) | 0.02857 |
| R(calc.) | 0.0800 |
| R(D445:17a) | 0.0752 |
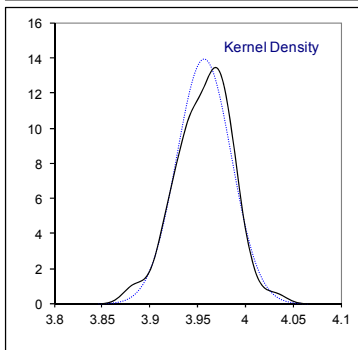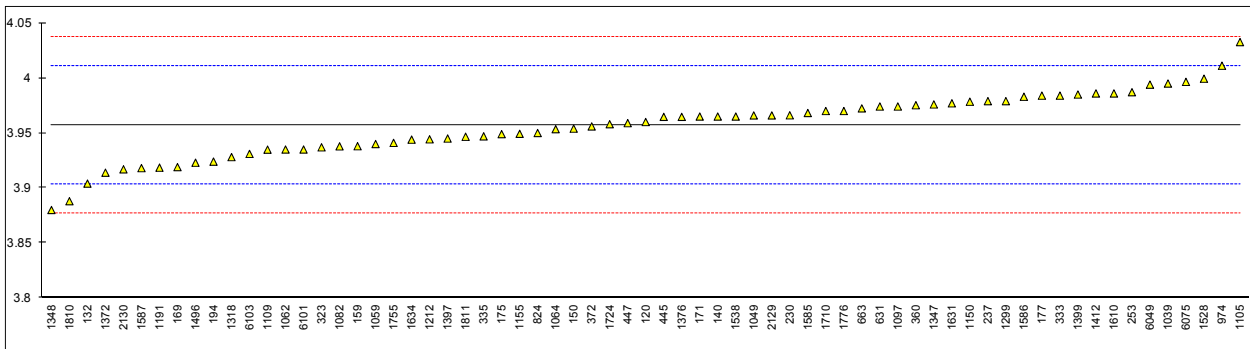
Determination of Mercaptan Sulphur as S on sample #17030; results in %M/M

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D3227 | 0.0004 | | -0.31 | |
| 131 | | ----- | | ----- | |
| 132 | D3227 | 0.0007 | | 2.25 | |
| 140 | D3227 | 0.0003 | | -1.16 | |
| 150 | D3227 | 0.0005 | | 0.55 | |
| 158 | | ----- | | ----- | |
| 159 | D3227 | 0.0005 | | 0.55 | |
| 169 | D3227 | 0.0005 | | 0.55 | |
| 171 | | 0.0005 | | 0.55 | |
| 175 | D3227 | 0.0004 | | -0.31 | |
| 177 | D3227 | 0.0005 | | 0.55 | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | D3227 | 0.00069 | | 2.17 | |
| 237 | | ----- | | ----- | |
| 238 | | ----- | | ----- | |
| 253 | | ----- | | ----- | |
| 273 | | ----- | | ----- | |
| 317 | | ----- | | ----- | |
| 323 | D3227 | 0.0004 | | -0.31 | |
| 333 | D3227 | 0.0004 | | -0.31 | |
| 334 | D3227 | 0.0004 | | -0.31 | |
| 335 | D3227 | 0.0006 | | 1.40 | |
| 336 | | ----- | | ----- | |
| 353 | | ----- | | ----- | |
| 360 | D3227 | 0.00038 | | -0.48 | |
| 372 | D3227 | 0.0005 | | 0.55 | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | D3227 | 0.0003 | | -1.16 | |
| 447 | D3227 | 0.00048 | | 0.38 | |
| 463 | | ----- | | ----- | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | | ----- | | ----- | |
| 663 | D3227 | 0.00036 | | -0.65 | |
| 671 | | ----- | | ----- | |
| 824 | D3227 | 0.00035 | | -0.73 | |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | | ----- | | ----- | |
| 998 | | ----- | | ----- | |
| 1006 | D3227 | 0.0005 | | 0.55 | |
| 1023 | | ----- | | ----- | |
| 1039 | | ----- | | ----- | |
| 1049 | D3227 | 0.000386 | | -0.43 | |
| 1059 | D3227 | 0.0004 | | -0.31 | |
| 1062 | D3227 | 0.0004 | | -0.31 | |
| 1064 | D3227 | 0.00037 | | -0.56 | |
| 1080 | | ----- | | ----- | |
| 1082 | ISO3012 | 0.000335 | | -0.86 | |
| 1097 | ISO3012 | 0.00045 | | 0.12 | |
| 1105 | D3227 | 0.000414 | | -0.19 | |
| 1109 | D3227 | 0.00036 | | -0.65 | |
| 1121 | | ----- | | ----- | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | ISO3012 | 0.00039 | | -0.39 | |
| 1161 | ISO3012 | 0.0005 | | 0.55 | |
| 1191 | ISO3012 | 0.00033 | | -0.90 | |
| 1205 | | ----- | | ----- | |
| 1212 | D3227 | 0.00049 | | 0.46 | |
| 1237 | | ----- | | ----- | |
| 1284 | D3227 | 0.00038 | | -0.48 | |
| 1297 | D3227 | 0.00055 | | 0.97 | |
| 1299 | D3227 | 0.0003 | | -1.16 | |
| 1318 | | ----- | | ----- | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D3227 | 0.00066 | | 1.91 | |
| 1348 | D3227 | 0.00047 | | 0.29 | |
| 1372 | D3227 | 0.00048 | | 0.38 | |
| 1376 | D3227 | 0.00042 | | -0.14 | |
| 1379 | | ----- | | ----- | |
| 1397 | D3227 | 0.0006 | | 1.40 | |
| 1399 | D3227 | 0.000392 | | -0.38 | |
| 1412 | D3227 | 0.0005 | | 0.55 | |
| 1429 | D3227 | 0.00038 | | -0.48 | |
| 1491 | | ----- | | ----- | |
| 1496 | D3227 | 0.00035 | | -0.73 | |
| 1498 | | ----- | | ----- | |
| 1528 | D3227 | 0.00038 | | -0.48 | |
| 1531 | | ----- | | ----- | |
| 1538 | | ----- | | ----- | |
| 1585 | D3227 | 0.00037 | | -0.56 | |
| 1586 | D3227 | 0.0003 | | -1.16 | |
| 1587 | | ----- | | ----- | |
| 1610 | IP342 | < 0.0003 | | ----- | |
| 1631 | D3227 | 0.00046 | | 0.20 | |
| 1634 | D3227 | 0.0003 | | -1.16 | |
| 1710 | D3227 | 0.0004 | | -0.31 | |
| 1720 | | ----- | | ----- | |
| 1724 | D3227 | 0.00039 | | -0.39 | |
| 1740 | | ----- | | ----- | |
| 1755 | | ----- | | ----- | |
| 1757 | | ----- | | ----- | |
| 1776 | D3227 | 0.0004 | | -0.31 | |
| 1810 | D3227 | 0.00035 | | -0.73 | |
| 1811 | D3227 | 0.000507 | | 0.61 | |
| 1883 | | ----- | | ----- | |
| 2129 | D3227 | 0.0004 | C | -0.31 | first reported: 0.003 |
| 2130 | IP342 | 0.0004 | | -0.31 | |
| 6049 | D3227 | 0.0005 | | 0.55 | |
| 6075 | D3227 | 0.0006 | | 1.40 | |
| 6101 | | ----- | | ----- | |
| 6103 | | ----- | | ----- | |
| 6108 | | ----- | | ----- | |

| | | |
|---|---|---|
| normality | OK | |
| n | 59 | |
| outliers | 0 | |
| mean (n) | 0.000436 | |
| st.dev. (n) | 0.0000952 | |
| R(calc.) | 0.000266 | |
| R(D3227:16) | 0.000328 | |
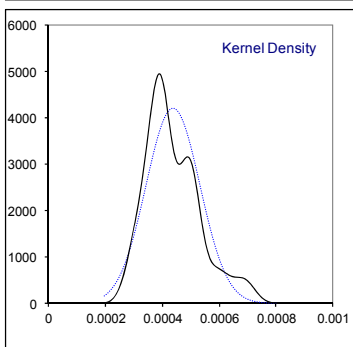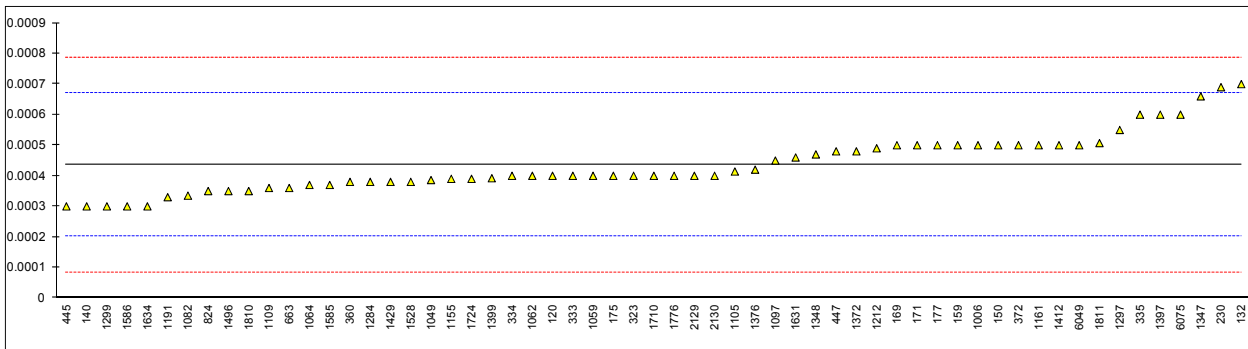
Determination of MSEP on sample #17030;

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D3948 | 90 | | -0.37 | |
| 131 | | ----- | | ----- | |
| 132 | D3948 | 90 | | -0.37 | |
| 140 | D3948 | 93 | | 0.40 | |
| 150 | | ----- | | ----- | |
| 158 | | ----- | | ----- | |
| 159 | D3948 | 90 | | -0.37 | |
| 169 | D3948 | 89 | | -0.63 | |
| 171 | D3948 | 88 | | -0.89 | |
| 175 | D3948 | 89 | | -0.63 | |
| 177 | D3948 | 90 | | -0.37 | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | D3948 | 94 | | 0.66 | |
| 237 | D3948 | 96.0 | | 1.18 | |
| 238 | | ----- | | ----- | |
| 253 | D3948 | 95 | | 0.92 | |
| 273 | | ----- | | ----- | |
| 317 | D3948 | 93 | | 0.40 | |
| 323 | D3948 | 86 | | -1.41 | |
| 333 | D3948 | 85 | | -1.66 | |
| 334 | D3948 | 86 | | -1.41 | |
| 335 | D3948 | 95 | | 0.92 | |
| 336 | D3948 | 85 | | -1.66 | |
| 353 | D3948 | 86 | | -1.41 | |
| 360 | D3948 | 93 | | 0.40 | |
| 372 | D3948 | 93 | | 0.40 | |
| 391 | | ----- | | ----- | |
| 398 | D3948 | 94 | | 0.66 | |
| 399 | | ----- | | ----- | |
| 445 | D3948 | 91 | | -0.11 | |
| 447 | D3948 | 93 | | 0.40 | |
| 463 | D3948 | 86 | C | -1.41 | first reported: 73 |
| 468 | | ----- | | ----- | |
| 473 | D3948 | 89 | | -0.63 | |
| 603 | D3948 | 91 | | -0.11 | |
| 604 | | ----- | | ----- | |
| 608 | D3948 | 97 | | 1.43 | |
| 631 | D3948 | 97 | | 1.43 | |
| 663 | D3948 | 93 | | 0.40 | |
| 671 | D3948 | 98 | | 1.69 | |
| 824 | D3948 | 95 | | 0.92 | |
| 825 | | ----- | | ----- | |
| 904 | D3948 | 97 | | 1.43 | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D3948 | 96 | | 1.18 | |
| 998 | | ----- | | ----- | |
| 1006 | | ----- | | ----- | |
| 1023 | D3948 | 81 | | -2.70 | |
| 1039 | D3948 | 90 | | -0.37 | |
| 1049 | D3948 | 94 | | 0.66 | |
| 1059 | D3948 | 89 | | -0.63 | |
| 1062 | D3948 | 94 | | 0.66 | |
| 1064 | D3948 | 94 | | 0.66 | |
| 1080 | | ----- | | ----- | |
| 1082 | | ----- | | ----- | |
| 1097 | D3948 | 83 | | -2.18 | |
| 1105 | D3948 | 95 | | 0.92 | |
| 1109 | D3948 | 90 | | -0.37 | |
| 1121 | D3948 | 89 | | -0.63 | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | D3948 | 88 | | -0.89 | |
| 1155 | | ----- | | ----- | |
| 1161 | | ----- | | ----- | |
| 1191 | D3948 | 94 | | 0.66 | |
| 1205 | | ----- | | ----- | |
| 1212 | D3948 | 92 | | 0.14 | |
| 1237 | | ----- | | ----- | |
| 1284 | | ----- | | ----- | |
| 1297 | | ----- | | ----- | |
| 1299 | D3948 | 95 | | 0.92 | |
| 1318 | D3948 | 87 | | -1.15 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D3948 | 91 | | -0.11 | |
| 1348 | D3948 | 87 | | -1.15 | |
| 1372 | D3948 | 97 | | 1.43 | |
| 1376 | D3948 | 94 | | 0.66 | |
| 1379 | | ----- | | ----- | |
| 1397 | D3948 | 96 | | 1.18 | |
| 1399 | D3948 | 89 | | -0.63 | |
| 1412 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D3948 | 95 | | 0.92 | |
| 1498 | | ----- | | ----- | |
| 1528 | D3948 | 97.5 | | 1.56 | |
| 1531 | | ----- | | ----- | |
| 1538 | D3948 | 97 | | 1.43 | |
| 1585 | D3948 | 88.7 | | -0.71 | |
| 1586 | D3948 | 84 | | -1.92 | |
| 1587 | D3948 | 88 | | -0.89 | |
| 1610 | D3948 | 93 | | 0.40 | |
| 1631 | D3948 | 87 | | -1.15 | |
| 1634 | D3948 | 91 | | -0.11 | |
| 1710 | D3948 | 92 | | 0.14 | |
| 1720 | D3948 | 88 | | -0.89 | |
| 1724 | D3948 | 94 | | 0.66 | |
| 1740 | | ----- | | ----- | |
| 1755 | D3948 | 95 | | 0.92 | |
| 1757 | D3948 | 95 | | 0.92 | |
| 1776 | | ----- | | ----- | |
| 1810 | | ----- | | ----- | |
| 1811 | D3948 | 90 | | -0.37 | |
| 1883 | D3948 | 94 | | 0.66 | |
| 2129 | D3948 | 95 | | 0.92 | |
| 2130 | D3948 | 98 | | 1.69 | |
| 6049 | D3948 | 88 | | -0.89 | |
| 6075 | D3948 | 91.5 | | 0.01 | |
| 6101 | D3948 | 85 | | -1.66 | |
| 6103 | D3948 | 91 | | -0.11 | |
| 6108 | | ----- | | ----- | |

| | | |
|---|---|---|
| normality | OK | |
| n | 76 | |
| outliers | 0 | |
| mean (n) | 91.44 | |
| st.dev. (n) | 3.976 | |
| R(calc.) | 11.13 | |
| R(D3948:14) | 10.85 | |
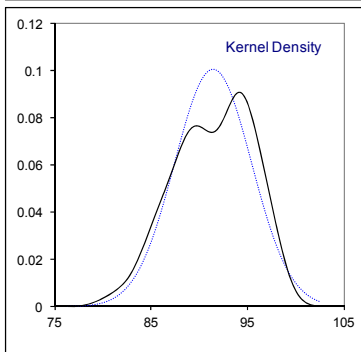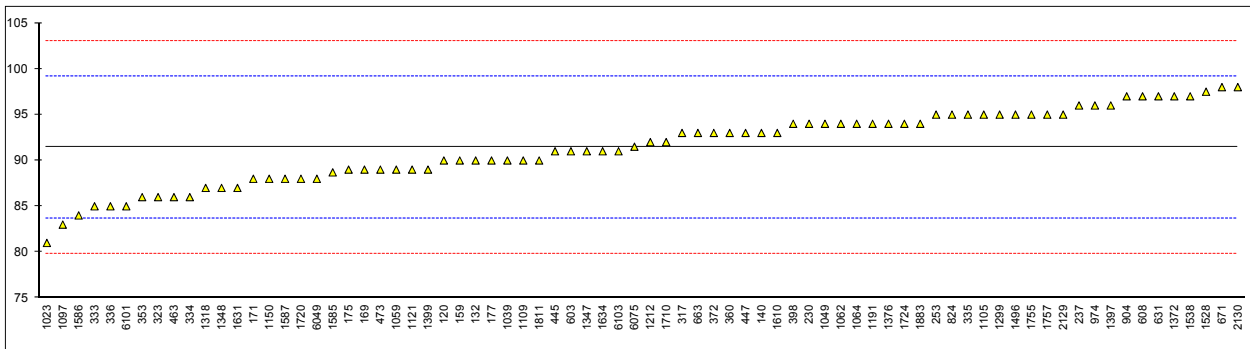
Determination of Naphthalenes on sample #17030; results in %V/V

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 120 | D1840 - meth.B | 0.54 | | 0.24 | |
| 131 | | ----- | | ----- | |
| 132 | D1840 - meth.B | 0.53 | | -0.19 | |
| 140 | D1840 - meth.A | 0.53 | | -0.19 | |
| 150 | D1840 - meth.A | 0.61 | R(0.05) | 3.28 | |
| 158 | | ----- | | ----- | |
| 159 | D1840 - meth.B | 0.54 | | 0.24 | |
| 169 | D1840 - meth.B | 0.53 | | -0.19 | |
| 171 | D1840 - meth.A | 0.53 | | -0.19 | |
| 175 | D1840 - meth.B | 0.54 | | 0.24 | |
| 177 | D1840 - meth.A | 0.58 | | 1.98 | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | | ----- | | ----- | |
| 237 | D1840 - meth.B | 0.53 | | -0.19 | |
| 238 | | ----- | | ----- | |
| 253 | D1840 - meth.B | 0.53 | | -0.19 | |
| 273 | | ----- | | ----- | |
| 317 | | ----- | | ----- | |
| 323 | D1840 - meth.A | 0.54 | | 0.24 | |
| 333 | D1840 - meth.B | 0.53 | | -0.19 | |
| 334 | | ----- | | ----- | |
| 335 | D1840 - meth.A | 0.58 | | 1.98 | |
| 336 | | ----- | | ----- | |
| 353 | | ----- | | ----- | |
| 360 | | ----- | | ----- | |
| 372 | D1840 - meth.B | 0.53 | | -0.19 | |
| 391 | D1840 - meth.B | 0.50 | | -1.49 | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | D1840 - meth.B | 0.57 | | 1.54 | |
| 447 | D1840 - meth.B | 0.52 | | -0.63 | |
| 463 | D1840 - meth.B | 0.559 | | 1.07 | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | D1840 - meth.A | 0.531 | | -0.15 | |
| 663 | D1840 - meth.A | 0.537 | | 0.11 | |
| 671 | | ----- | | ----- | |
| 824 | D1840 - meth.B | 0.51 | | -1.06 | |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D1840 - meth.A | 0.52 | | -0.63 | |
| 998 | | ----- | | ----- | |
| 1006 | | ----- | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | D1840 - meth.B | 0.54 | | 0.24 | |
| 1049 | D1840 - meth.A | 0.527 | | -0.32 | |
| 1059 | D1840 - meth.B | 0.54 | C | 0.24 | first reported: 0.43 |
| 1062 | D1840 - meth.A | 0.52 | | -0.63 | |
| 1064 | D1840 - meth.A | 0.522 | | -0.54 | |
| 1080 | | ----- | | ----- | |
| 1082 | D1840 - meth.A | 0.54 | | 0.24 | |
| 1097 | D1840 - meth.A | 0.532 | | -0.11 | |
| 1105 | D1840 - meth.A | 0.5875 | | 2.30 | |
| 1109 | D1840 - meth.B | 0.490 | | -1.93 | |
| 1121 | | ----- | | ----- | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | | ----- | | ----- | |
| 1161 | | ----- | | ----- | |
| 1191 | D1840 - meth.B | 0.56 | | 1.11 | |
| 1205 | | ----- | | ----- | |
| 1212 | D1840 - meth.B | 0.506 | | -1.23 | |
| 1237 | | ----- | | ----- | |
| 1284 | | ----- | | ----- | |
| 1297 | | ----- | | ----- | |
| 1299 | D1840 - meth.B | 0.53 | | -0.19 | |
| 1318 | D1840 - meth.B | 0.52 | | -0.63 | |

| lab | method | value | mark | z(targ) | remarks |
|---|---|---|---|---|---|
| 1347 | D1840 - meth.B | 0.522 | | -0.54 | |
| 1348 | D1840 - meth.B | 0.51 | | -1.06 | |
| 1372 | | ----- | | ----- | |
| 1376 | D1840 - meth.A | 0.535 | | 0.02 | |
| 1379 | | ----- | | ----- | |
| 1397 | D6379 | 0.491 | | -1.88 | |
| 1399 | | ----- | | ----- | |
| 1412 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D1840 - meth.B | 0.5325 | | -0.08 | |
| 1498 | | ----- | | ----- | |
| 1528 | | ----- | | ----- | |
| 1531 | | ----- | | ----- | |
| 1538 | D1840 - meth.B | 0.54 | | 0.24 | |
| 1585 | D1840 - meth.B | 0.545 | | 0.46 | |
| 1586 | | ----- | | ----- | |
| 1587 | | ----- | | ----- | |
| 1610 | D1840 - meth.B | 0.36 | R(0.01) | -7.57 | |
| 1631 | | ----- | | ----- | |
| 1634 | D1840 - meth.B | 0.52 | | -0.63 | |
| 1710 | D1840 - meth.A | 0.56 | | 1.11 | |
| 1720 | D1840 - meth.B | 0.65 | C,R(0.01) | 5.01 | first reported: 0.76 |
| 1724 | | ----- | | ----- | |
| 1740 | | ----- | | ----- | |
| 1755 | | ----- | | ----- | |
| 1757 | | ----- | | ----- | |
| 1776 | D1840 - meth.A | 0.54 | | 0.24 | |
| 1810 | D1840 - meth.A | 0.53 | | -0.19 | |
| 1811 | D1840 - meth.A | 0.5119 | | -0.98 | |
| 1883 | | ----- | | ----- | |
| 2129 | D1840 - meth.A | 0.5453 | | 0.47 | |
| 2130 | D1840 - meth.B | 0.58 | C | 1.98 | first reported: 1.01 |
| 6049 | D1840 - meth.B | 0.54 | | 0.24 | |
| 6075 | D1840 - meth.B | 0.536 | | 0.07 | |
| 6101 | | ----- | | ----- | |
| 6103 | D1840 - meth.B | 0.5311 | | -0.15 | |
| 6108 | | ----- | | ----- | |

| | | | | **D1840 method A only** | **D1840 method B only** |
|---|---|---|---|---|---|
| normality | OK | | | suspect | OK |
| n | 52 | | | 21 | 30 |
| outliers | 3 | | | 1 | 2 |
| mean (n) | 0.53445 | | | 0.53994 | 0.53205 |
| st.dev. (n) | 0.020751 | | | 0.020550 | 0.019319 |
| R(calc.) | 0.05810 | | | 0.05754 | 0.05409 |
| R(D1840-B:07) | 0.06455 | | | - | 0.06437 |
| Compare R(D1840-A:07) | 0.04588 | | | 0.04604 | - |
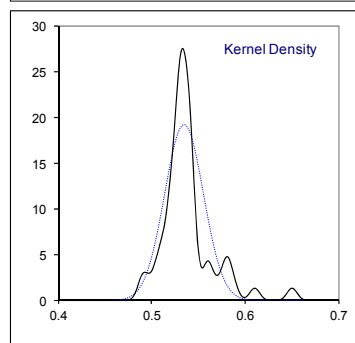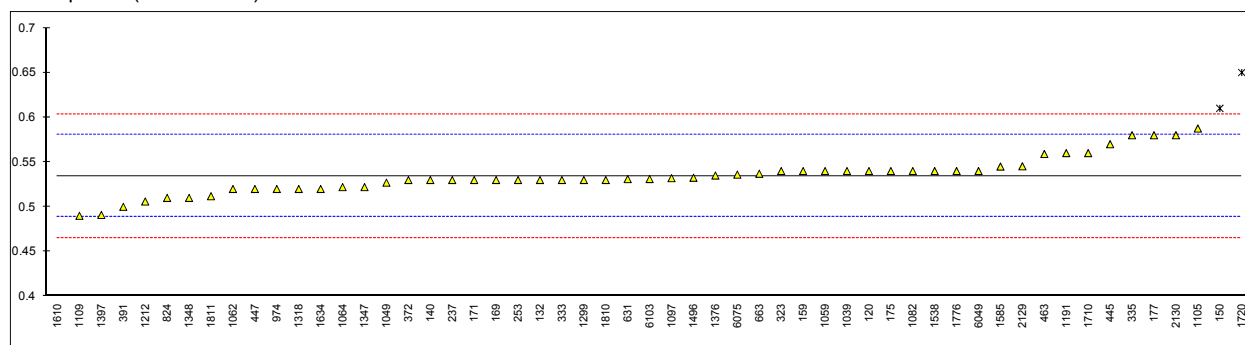
## Determination of Smoke Point on sample #17030; results in mm

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D1322_A | 25.5 | | 0.76 | |
| 131 | | ----- | | ----- | |
| 132 | D1322_M | 24.1 | | -0.27 | |
| 140 | D1322_A | 24.9 | | 0.32 | |
| 150 | D1322_A | 24.2 | | -0.20 | |
| 158 | | ----- | | ----- | |
| 159 | D1322_A | 25.1 | | 0.47 | |
| 169 | D1322_A | 25.0 | | 0.39 | |
| 171 | D1322_A | 24.5 | | 0.02 | |
| 175 | D1322_M | 22.2 | | -1.68 | |
| 177 | D1322_A | 24.7 | | 0.17 | |
| 194 | D1322_M | 23.7 | | -0.57 | |
| 228 | | ----- | | ----- | |
| 230 | D1322_M | 24.9 | | 0.32 | |
| 237 | D1322_A | 24.1 | | -0.27 | |
| 238 | | ----- | | ----- | |
| 253 | D1322_M | 24 | | -0.35 | |
| 273 | D1322 | 24 | | -0.35 | |
| 317 | | ----- | | ----- | |
| 323 | D1322_M | 22.0 | | -1.83 | |
| 333 | D1322_A | 24.6 | | 0.10 | |
| 334 | D1322_A | 24.8 | | 0.24 | |
| 335 | D1322_M | 25.6 | | 0.84 | |
| 336 | | ----- | | ----- | |
| 353 | IP57_M | 25.92 | | 1.07 | |
| 360 | D1322_M | 24.5 | | 0.02 | |
| 372 | D1322_M | 23.2 | | -0.94 | |
| 391 | D1322_M | 24 | | -0.35 | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | IP598_M | 27.0 | | 1.87 | |
| 447 | D1322_M | 24 | | -0.35 | |
| 463 | D1322_M | 23.50 | | -0.72 | |
| 468 | D1322_M | 27.0 | | 1.87 | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | D1322_A | 24.8 | | 0.24 | |
| 663 | | ----- | | ----- | |
| 671 | | ----- | | ----- | |
| 824 | D1322_A | 24.2 | | -0.20 | |
| 825 | | ----- | | ----- | |
| 904 | D1322 | 25 | | 0.39 | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D1322_M | 25 | | 0.39 | |
| 998 | | ----- | | ----- | |
| 1006 | | ----- | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | D1322_A | 24.5 | | 0.02 | |
| 1049 | D1322_A | 25.0 | | 0.39 | |
| 1059 | D1322_M | 21.2 | | -2.42 | |
| 1062 | D1322_M | 22 | | -1.83 | |
| 1064 | D1322_A | 24.6 | | 0.10 | |
| 1080 | | ----- | | ----- | |
| 1082 | D1322_A | 24.4 | | -0.05 | |
| 1097 | D1322_M | 24.33 | | -0.10 | |
| 1105 | _A | 24.3 | | -0.13 | |
| 1109 | D1322_M | 23.76 | | -0.52 | |
| 1121 | D1322_M | 23.5 | | -0.72 | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | D1322 | 24.33 | | -0.10 | |
| 1161 | ISO3014_M | 24.2 | | -0.20 | |
| 1191 | D1322_A | 24.2 | | -0.20 | |
| 1205 | | ----- | | ----- | |
| 1212 | D1322_M | 24.8 | | 0.24 | |
| 1237 | | ----- | | ----- | |
| 1284 | D1322_A | 24.5 | | 0.02 | |
| 1297 | D1322 | 24.5 | | 0.02 | |
| 1299 | D1322_A | 24.1 | | -0.27 | |
| 1318 | D1322_A | 25.0 | | 0.39 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D1322_M | 24 | | -0.35 | |
| 1348 | D1322_M | 25 | | 0.39 | |
| 1372 | D1322_A | 24.3 | | -0.13 | |
| 1376 | D1322_M | 24.33 | C | -0.10 | first reported: 20.08 |
| 1379 | | ----- | | ----- | |
| 1397 | D1322 | 24.0 | | -0.35 | |
| 1399 | D1322_A | 26 | | 1.13 | |
| 1412 | D1322_M | 23.5 | | -0.72 | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D1322_A | 24.4 | | -0.05 | |
| 1498 | | ----- | | ----- | |
| 1528 | D1322_M | 25.0 | | 0.39 | |
| 1531 | | ----- | | ----- | |
| 1538 | D1322_M | 24.0 | | -0.35 | |
| 1585 | D1322_M | 26.25 | | 1.32 | |
| 1586 | D1322_M | 24.0 | | -0.35 | |
| 1587 | D1322_A | 25.1 | | 0.47 | |
| 1610 | IP598 | 25.0 | | 0.39 | |
| 1631 | D1322_M | 25 | | 0.39 | |
| 1634 | D1322_A | 24.4 | | -0.05 | |
| 1710 | D1322_M | 25.5 | | 0.76 | |
| 1720 | _A | 24.5 | | 0.02 | |
| 1724 | D1322 | 25 | | 0.39 | |
| 1740 | | ----- | | ----- | |
| 1755 | | ----- | | ----- | |
| 1757 | | ----- | | ----- | |
| 1776 | D1322_A | 24.8 | | 0.24 | |
| 1810 | D1322_M | 24.5 | | 0.02 | |
| 1811 | D1322_A | 24.2 | | -0.20 | |
| 1883 | | ----- | | ----- | |
| 2129 | D1322_M | 24.5 | | 0.02 | |
| 2130 | IP598_A | 24.4 | | -0.05 | |
| 6049 | D1322_M | 23.0 | | -1.09 | |
| 6075 | D1322 | 24.3 | | -0.13 | |
| 6101 | D1322_M | 26.9 | | 1.80 | |
| 6103 | D1322_A | 24.6 | | 0.10 | |
| 6108 | | ----- | | ----- | |

| | | | | D1322 Manual only | D1322 Automated only |
|---|---|---|---|---|---|
| normality | not OK | | | OK | not OK |
| n | 76 | | | 34 | 28 |
| outliers | 0 | | | 0 | 0 |
| mean (n) | 24.47 | | | 24.20 | 24.66 |
| st.dev. (n) | 0.984 | | | 1.279 | 0.441 |
| R(calc.) | 2.76 | | | 3.58 | 1.23 |
| R(D1322:15e1-M) | 3.79 | | | 3.76 | - |
| Compare R(D1322:15e1-A) | 0.90 | | | - | 0.90 |

_A = automated and _M = manual





Kernel Density
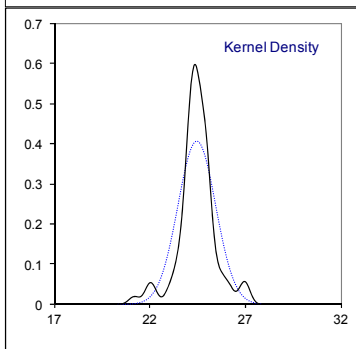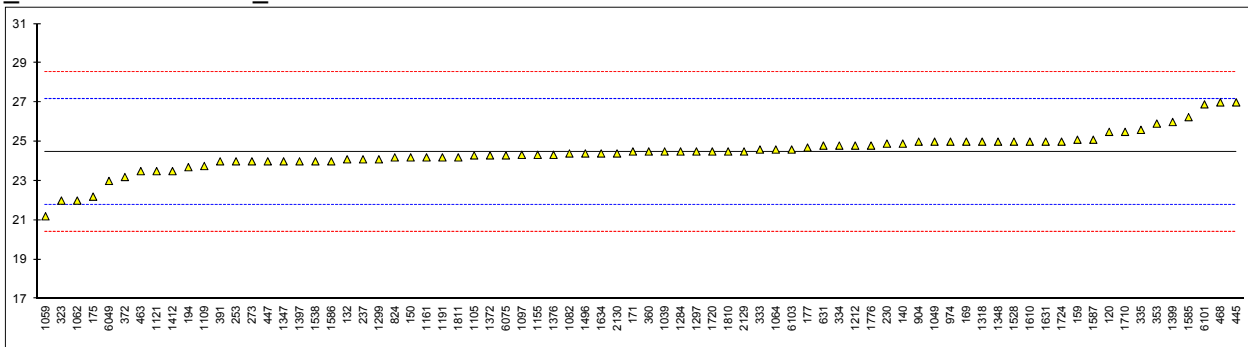
Determination of Specific Energy (Net, on Sulphur free basis) on sample #17030; results in MJ/kg

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D3338 | 43.336 | | -0.05 | |
| 131 | | ----- | | ----- | |
| 132 | D3338 | 43.345 | | 0.50 | |
| 140 | D3338 | 43.330 | | -0.41 | |
| 150 | D3338 | 43.349 | | 0.74 | |
| 158 | | ----- | | ----- | |
| 159 | D3338 | 43.310 | C | -1.63 | first reported: 43.064 |
| 169 | D3338 | 43.315 | | -1.33 | |
| 171 | D3338 | 43.350 | | 0.80 | |
| 175 | | ----- | | ----- | |
| 177 | D3338 | 43.342 | | 0.32 | |
| 194 | | ----- | | ----- | |
| 228 | | ----- | | ----- | |
| 230 | D3338 | 43.351 | | 0.86 | |
| 237 | D3338 | 43.343 | | 0.38 | |
| 238 | | ----- | | ----- | |
| 253 | D3338 | 43.3372 | | 0.02 | |
| 273 | | ----- | | ----- | |
| 317 | | ----- | | ----- | |
| 323 | D3338 | 43.356 | | 1.17 | |
| 333 | | ----- | | ----- | |
| 334 | | ----- | | ----- | |
| 335 | D3338 | 43.328 | | -0.54 | |
| 336 | | ----- | | ----- | |
| 353 | | ----- | | ----- | |
| 360 | D3338 | 43.356 | | 1.17 | |
| 372 | D3338 | 43.341 | | 0.25 | |
| 391 | | ----- | | ----- | |
| 398 | | ----- | | ----- | |
| 399 | | ----- | | ----- | |
| 445 | D3338 | 43.346 | | 0.56 | |
| 447 | D3338 | 43.344 | | 0.44 | |
| 463 | D3338 | 43.36 | | 1.41 | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | | ----- | | ----- | |
| 631 | D3338 | 43.361 | | 1.47 | |
| 663 | D3338 | 43.351 | | 0.86 | |
| 671 | | ----- | | ----- | |
| 824 | D3338 | 43.339 | | 0.13 | |
| 825 | | ----- | | ----- | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D3338 | 43.334 | | -0.17 | |
| 998 | | ----- | | ----- | |
| 1006 | | ----- | | ----- | |
| 1023 | | ----- | | ----- | |
| 1039 | D3338 | 43.359 | | 1.35 | |
| 1049 | D3338 | 43.3087 | | -1.71 | |
| 1059 | D3338 | 43.336 | | -0.05 | |
| 1062 | D3338 | 43.313 | | -1.45 | |
| 1064 | D3338 | 43.3471 | | 0.63 | |
| 1080 | | ----- | | ----- | |
| 1082 | D3338 | 43.3125 | | -1.48 | |
| 1097 | D3338 | 43.332 | | -0.29 | |
| 1105 | D3338 | 43.32 | | -1.02 | |
| 1109 | D3338 | 43.33 | | -0.41 | |
| 1121 | | ----- | | ----- | |
| 1126 | | ----- | | ----- | |
| 1146 | | ----- | | ----- | |
| 1150 | | ----- | | ----- | |
| 1155 | | ----- | | ----- | |
| 1161 | D3338 | 43.338 | | 0.07 | |
| 1191 | D3338 | 43.315 | | -1.33 | |
| 1205 | | ----- | | ----- | |
| 1212 | D3338 | 43.350 | | 0.80 | |
| 1237 | | ----- | | ----- | |
| 1284 | D3338 | 43.311 | | -1.57 | |
| 1297 | | ----- | | ----- | |
| 1299 | D3338 | 43.33 | | -0.41 | |
| 1318 | D3338 | 43.324 | | -0.78 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D3338 | 43.321 | | -0.96 | |
| 1348 | D3338 | 43.32 | | -1.02 | |
| 1372 | D3338 | 43.3269 | | -0.60 | |
| 1376 | D3338 | 43.3275 | | -0.57 | |
| 1379 | | ----- | | ----- | |
| 1397 | D3338 | 43.29 | | -2.85 | |
| 1399 | | ----- | | ----- | |
| 1412 | | ----- | | ----- | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D3338 | 43.3564 | | 1.19 | |
| 1498 | | ----- | | ----- | |
| 1528 | D3338 | 43.3430 | | 0.38 | |
| 1531 | | ----- | | ----- | |
| 1538 | | ----- | | ----- | |
| 1585 | D3338 | 43.350 | | 0.80 | |
| 1586 | D3338 | 43.34 | | 0.19 | |
| 1587 | | ----- | | ----- | |
| 1610 | D3338 | 43.324 | | -0.78 | |
| 1631 | | 43.354 | | 1.05 | |
| 1634 | | ----- | | ----- | |
| 1710 | D3338 | 43.364 | | 1.65 | |
| 1720 | | ----- | | ----- | |
| 1724 | | ----- | | ----- | |
| 1740 | | ----- | | ----- | |
| 1755 | | ----- | | ----- | |
| 1757 | | ----- | | ----- | |
| 1776 | D3338 | 43.34 | | 0.19 | |
| 1810 | | ----- | | ----- | |
| 1811 | D3338 | 43.3480 | | 0.68 | |
| 1883 | | ----- | | ----- | |
| 2129 | D3338 | 43.336 | | -0.05 | |
| 2130 | D3338 | 43.37 | | 2.02 | |
| 6049 | D3338 | 43.32 | | -1.02 | |
| 6075 | D3338 | 43.3454 | | 0.52 | |
| 6101 | D3338 | 43.33499 | C | -0.11 | first reported: 43.2449 |
| 6103 | D4809 | 43.158 | C,R(0.01) | -10.88 | first reported: 44.056 |
| 6108 | | ----- | | ----- | |

| | | |
|---|---|---|
| normality | OK | |
| n | 56 | |
| outliers | 1 | |
| mean (n) | 43.3368 | |
| st.dev. (n) | 0.01648 | |
| R(calc.) | 0.0461 | |
| R(D3338:09e2) | 0.0460 | |
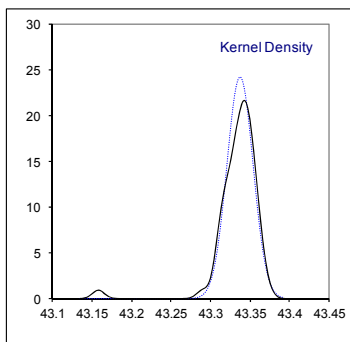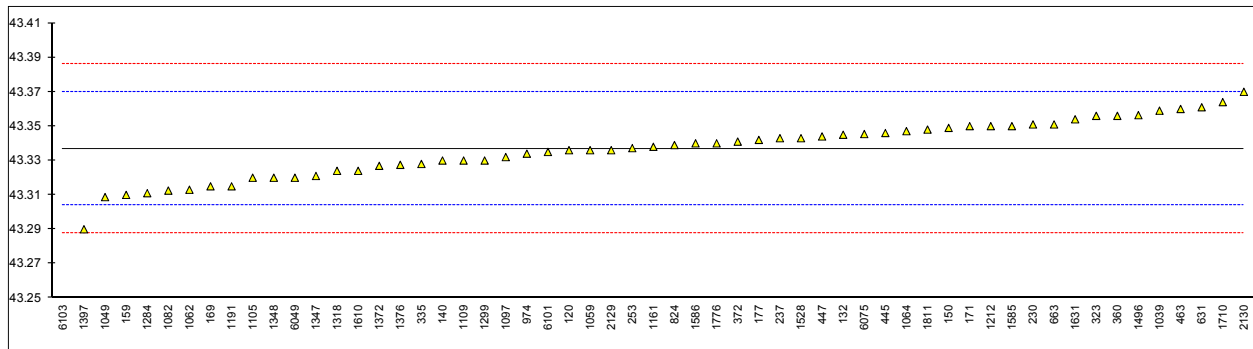
Determination of Sulphur, Total on sample #17030; results in mg/kg

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 120 | D4294 | 585 | | -0.29 | |
| 131 | | ----- | | ----- | |
| 132 | D2622 | 600 | | 0.26 | |
| 140 | | ----- | | ----- | |
| 150 | D5453 | 573 | | -0.74 | |
| 158 | | ----- | | ----- | |
| 159 | D4294 | 591 | | -0.07 | |
| 169 | D4294 | 572 | | -0.78 | |
| 171 | D5453 | 558 | | -1.30 | |
| 175 | | ----- | | ----- | |
| 177 | D4294 | 553 | C | -1.49 | first reported: 0.0553 mg/kg |
| 194 | D2622 | 606 | | 0.49 | |
| 228 | | ----- | | ----- | |
| 230 | D4294 | 603 | C | 0.38 | reported: 0.0603 mg/kg |
| 237 | D5453 | 566.0 | | -1.00 | |
| 238 | D4294 | 573.0 | | -0.74 | |
| 253 | D4294 | 590 | | -0.11 | |
| 273 | D5453 | 600 | | 0.26 | |
| 317 | | ----- | | ----- | |
| 323 | D5453 | 587 | | -0.22 | |
| 333 | D4294 | 599.0 | C | 0.23 | first reported: 0.06 mg/kg |
| 334 | D5453 | 536 | | -2.12 | |
| 335 | D4294 | 605 | C | 0.45 | first reported: 0.0605 mg/kg |
| 336 | ISO8754 | 593 | | 0.00 | |
| 353 | IP336 | 628 | C | 1.31 | first reported: 0.0628 mg/kg |
| 360 | D5453 | 580 | | -0.48 | |
| 372 | D5453 | 596 | | 0.12 | |
| 391 | D5453 | 592 | | -0.03 | |
| 398 | D4294 | 600 | | 0.26 | |
| 399 | D4294 | 605 | | 0.45 | |
| 445 | D5453 | 633.3 | | 1.51 | |
| 447 | IP336 | 580 | C | -0.48 | first reported: 0.058 mg/kg |
| 463 | D4294 | 610 | | 0.64 | |
| 468 | | ----- | | ----- | |
| 473 | | ----- | | ----- | |
| 603 | | ----- | | ----- | |
| 604 | | ----- | | ----- | |
| 608 | D5453 | 581.3 | | -0.43 | |
| 631 | D4294 | 594 | | 0.04 | |
| 663 | D5453 | 578.6 | | -0.53 | |
| 671 | | ----- | | ----- | |
| 824 | D5453 | 590 | | -0.11 | |
| 825 | IP336 | 593 | | 0.00 | |
| 904 | | ----- | | ----- | |
| 962 | | ----- | | ----- | |
| 963 | | ----- | | ----- | |
| 974 | D4294 | 582 | | -0.41 | |
| 998 | D4294 | 624 | | 1.16 | |
| 1006 | D2622 | 606 | | 0.49 | |
| 1023 | ISO14596 | 580 | | -0.48 | |
| 1039 | D2622 | 598 | | 0.19 | |
| 1049 | D5453 | 603.1 | | 0.38 | |
| 1059 | ISO14596 | 520 | | -2.72 | |
| 1062 | D5453 | 602 | | 0.34 | |
| 1064 | D5453 | 566.55 | | -0.98 | |
| 1080 | D5453 | 597 | | 0.15 | |
| 1082 | D4294 | 650 | | 2.13 | |
| 1097 | D5453 | 563.14 | | -1.11 | |
| 1105 | D4294 | 590.55 | | -0.09 | |
| 1109 | D2622 | 610.3 | | 0.65 | |
| 1121 | IP336 | 606 | | 0.49 | |
| 1126 | ISO20846 | 595.1 | | 0.08 | |
| 1146 | D4294 | 530 | | -2.34 | |
| 1150 | ISO20884 | 547.56 | | -1.69 | |
| 1155 | D1266 | 631.90 | | 1.45 | |
| 1161 | ISO20846 | 565 | | -1.04 | |
| 1191 | D4294 | 600 | | 0.26 | |
| 1205 | ISO14596 | 603.7 | | 0.40 | |
| 1212 | D4294 | 634 | | 1.53 | |
| 1237 | ISO8754 | 640 | | 1.76 | |
| 1284 | D2622 | 583 | | -0.37 | |
| 1297 | D4294 | 596.2 | | 0.12 | |
| 1299 | D2622 | 590 | | -0.11 | |
| 1318 | D5453 | 552.3 | | -1.51 | |

| lab | method | value | mark | z(targ) | remarks |
|-----|--------|-------|------|---------|---------|
| 1347 | D5453 | 597.5 | | 0.17 | |
| 1348 | D5453 | 539 | | -2.01 | |
| 1372 | D4294 | 615 | | 0.82 | |
| 1376 | D5453 | 593.9 | | 0.04 | |
| 1379 | | ----- | | ----- | |
| 1397 | D2622 | 604 | | 0.41 | |
| 1399 | D4294 | 554 | | -1.45 | |
| 1412 | D5453 | 600 | | 0.26 | |
| 1429 | | ----- | | ----- | |
| 1491 | | ----- | | ----- | |
| 1496 | D4294 | 580.5 | | -0.46 | |
| 1498 | D5453 | 684.0 | R(0.05) | 3.40 | |
| 1528 | D2622 | 605.8 | | 0.48 | |
| 1531 | | ----- | | ----- | |
| 1538 | D5453 | 567 | | -0.97 | |
| 1585 | D4294 | 557.5 | | -1.32 | |
| 1586 | D5453 | 618 | | 0.94 | |
| 1587 | D4294 | 588.4 | | -0.17 | |
| 1610 | IP336 | 690 | R(0.05) | 3.62 | |
| 1631 | | 579.4 | | -0.50 | |
| 1634 | D5453 | 626 | C | 1.23 | first reported: 18.2 |
| 1710 | D4294 | 597 | | 0.15 | |
| 1720 | D5453 | 600.5 | | 0.28 | |
| 1724 | D5453 | 586 | | -0.26 | |
| 1740 | D4294 | 625 | | 1.20 | |
| 1755 | D2622 | 619.1062 | | 0.98 | |
| 1757 | | ----- | | ----- | |
| 1776 | D5453 | 564 | | -1.08 | |
| 1810 | ISO8754 | 624 | | 1.16 | |
| 1811 | D5453 | 619.2 | | 0.98 | |
| 1883 | | ----- | | ----- | |
| 2129 | IP496 | 623.0 | | 1.12 | |
| 2130 | D5453 | 646 | C | 1.98 | first reported: 137 |
| 6049 | D4294 | 613 | | 0.75 | |
| 6075 | D5453 | 600 | C | 0.26 | reported: 0.06 mg/kg |
| 6101 | D4294 | 613 | | 0.75 | |
| 6103 | | ----- | | ----- | |
| 6108 | | ----- | | ----- | |

| | |
|---|---|
| normality | OK |
| n | 88 |
| outliers | 2 |
| mean (n) | 592.891 |
| st.dev. (n) | 25.6748 |
| R(calc.) | 71.890 |
| R(D5453:16e1) | 75.119 |
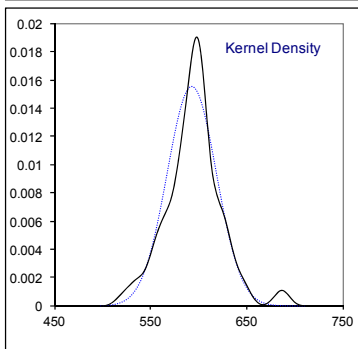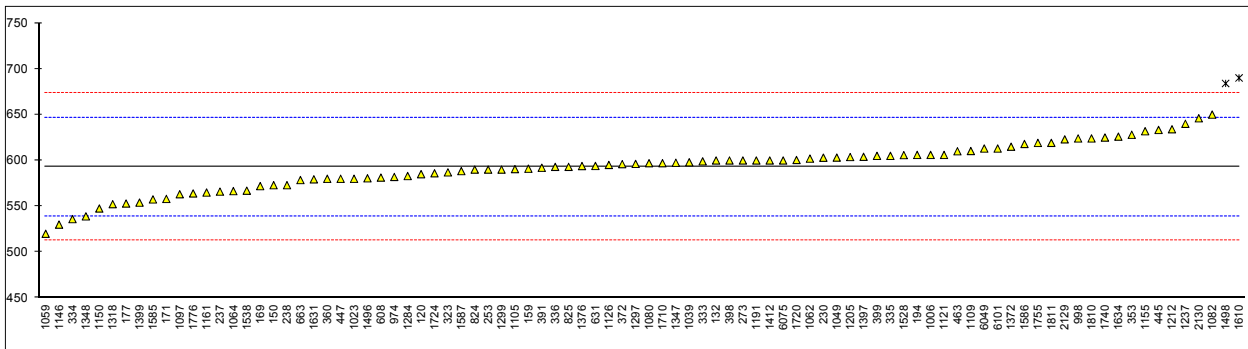
Determination of Particle Size Distribution on sample #17031 acc. to IP564, results in counts/ml

| lab | method | ≥4µm (c) | m | ≥6µm (c) | m | ≥14µm (c) | m | ≥21µm (c) | m | ≥25µm (c) | m | ≥30µm (c) | m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 140 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 150 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 171 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 230 | IP564 | 10585.6 | | 3693.5 | | 178.4 | | 75.9 | | 68.2 | G1 | 64.4 | G1 |
| 237 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 253 | IP564 | 14770 | | 5866 | | 343 | D5 | 17 | | 4 | | 1 | |
| 323 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 333 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 334 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 335 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 360 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 372 | IP564 | 15106.6 | | 5012.0 | | 106.0 | | 11.7 | | 5.2 | | 2.0 | |
| 445 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 447 | IP564 | 12431.2 | | 3386.1 | | 39.4 | | 5.4 | | 2.3 | | 0.8 | |
| 824 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 904 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 962 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 963 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 974 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1023 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1039 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1059 | IP564 | 14312.7 | | 5056.4 | | 150.0 | | 38.9 | DG5 | 30.4 | G1 | 27.8 | G1 |
| 1062 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1064 | IP564 | 17452.47 | | 5752.97 | | 133.50 | | 9.23 | | 2.17 | | 0.50 | |
| 1095 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1097 | IP564 | 19146.8 | | 7667.7 | | 201.9 | | 16.7 | | 6.1 | | 1.9 | |
| 1105 | IP564 | 8119.1 | D5 | 2749.3 | D5 | 68.5 | | 7.4 | | 2.6 | | 1.2 | |
| 1109 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1299 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1376 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1498 | IP564 | 4226.3 | C,D5 | 968.9 | C,D5 | 19.6 | ex,C | 4.6 | C | 2.5 | C | 1.0 | C |
| 1528 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1585 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1587 | IP564-B | 16053.1 | | 6029.3 | | 149.8 | | 18.9 | | 8.4 | | 3.3 | |
| 1610 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1631 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1634 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1710 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1720 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1724 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1776 | IP564 | 18920.5 | | 7627.3 | | 129.6 | | 7.9 | | 2.8 | | 0.6 | |
| 1810 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1811 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 2130 | IP564 | 17238 | | 7389 | | 260 | | 33 | DG5 | 17 | G1 | 5 | G5 |
| 6075 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 6101 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 6108 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| | | | | | | | | | | ----- | | ----- | |
| normality | | OK | | OK | | OK | | OK | | suspect | | not OK | |
| n | | 10 | | 10 | | 10 | | 9 | | 9 | | 9 | |
| outliers | | 2 | | 2 | | 1+1ex | | 3 | | 3 | | 3 | |
| mean (n) | | 15602 | | 5748 | | 141.7 | | 10.98 | | 4.01 | | 1.37 | |
| st.dev. (n) | | 2742.7 | | 1521.1 | | 63.61 | | 5.355 | | 2.153 | | 0.893 | |
| R(calc.) | | 7679 | | 4259 | | 178.1 | | 14.99 | | 6.03 | | 2.50 | |
| R(IP564:13) | | 2968 | | 1740 | | 75.1 | | 13.92 | | 5.37 | | 2.26 | |

m=mark
D5=D(0.05)
DG5=DG(0.05)
G(1)=G(0.01)
G(5)=G(0.05)

Lab 1498 reported the test results in counts/ml in the table of scale number. Test result at ≥14µm is excluded as corresponding test result in ISO4406 scale number is a statistical outlier.
Lab 1587 reported to use IP564 Annex B

≥ 4 µm (c)

≥ 6 µm (c)

≥ 14 µm (c)
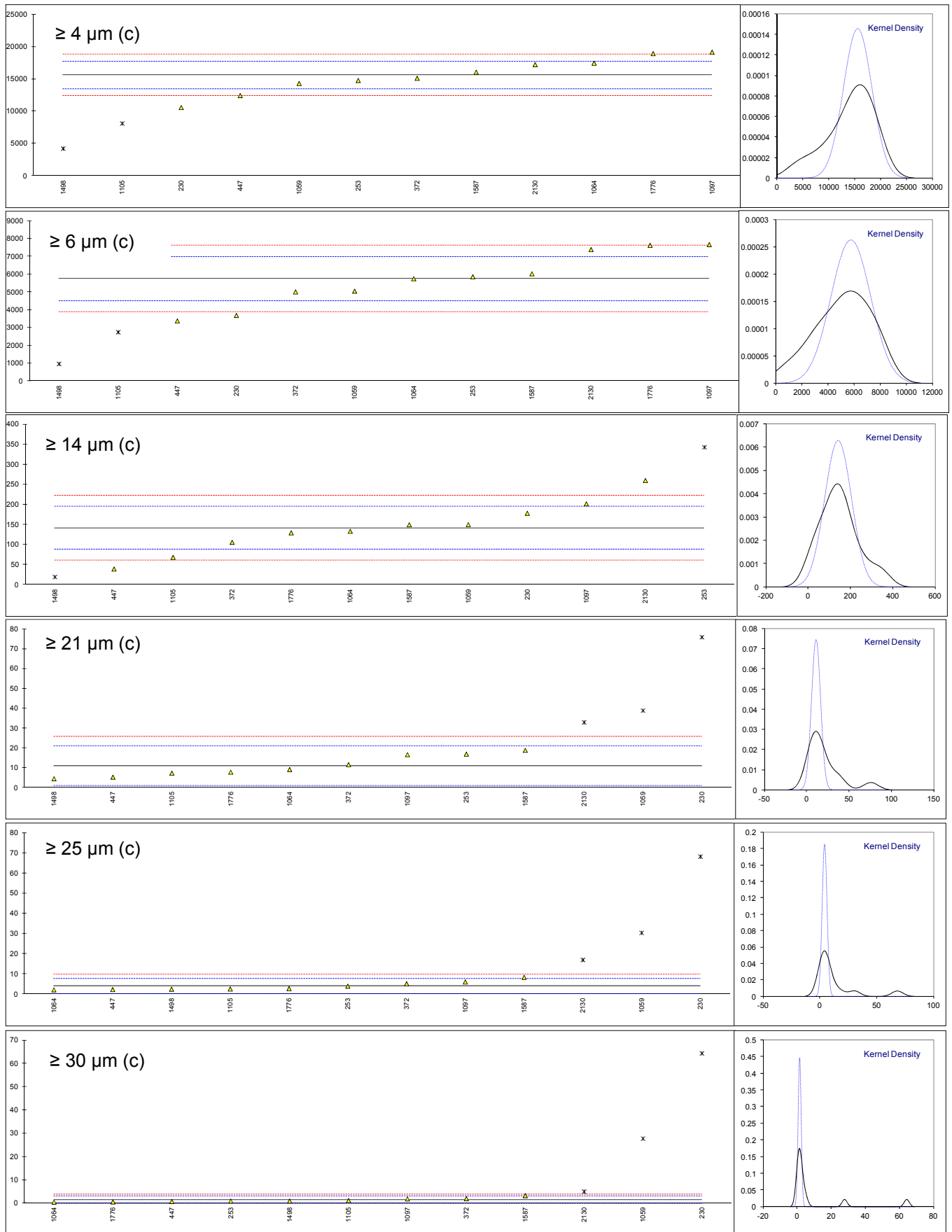
≥ 21 µm (c)

≥ 25 µm (c)

≥ 30 µm (c)

Determination of Particle Size Distribution by IP564 on sample #17031 acc. to ISO4406 scale, results in scale number

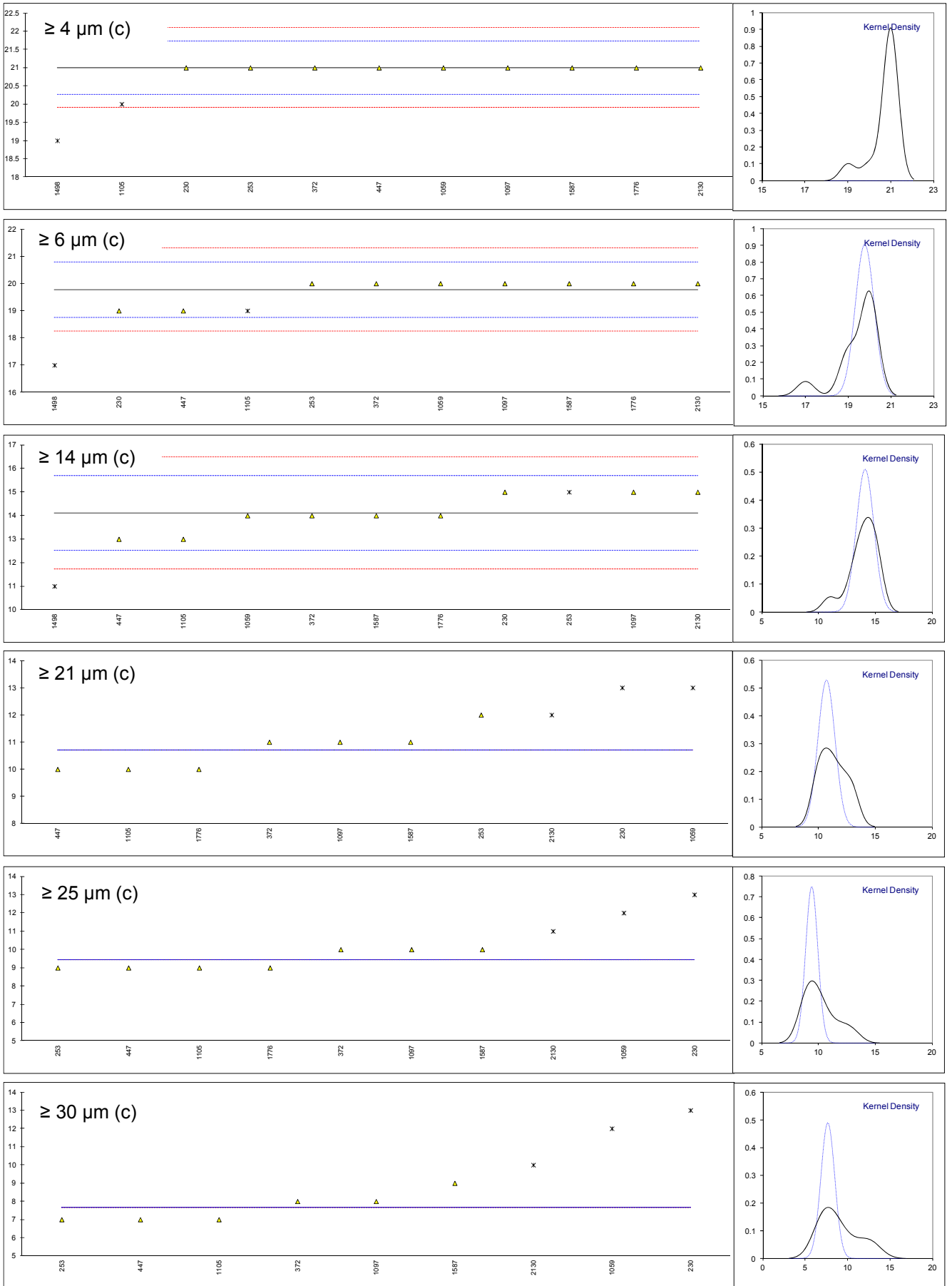| lab | method | ≥4µm (c) | m | ≥6µm (c) | m | ≥14µm (c) | m | ≥21µm (c) | m | ≥25µm (c) | m | ≥30µm (c) | m |
|-----|--------|------|---|------|---|------|---|------|---|------|---|------|---|
| 140 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 150 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 171 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 230 | ISO4406 | 21 | | 19 | | 15 | | 13 | ex | 13 | ex | 13 | D5 |
| 237 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 253 | ISO4406 | 21 | | 20 | | 15 | ex | 12 | | 9 | | 7 | |
| 323 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 333 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 334 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 335 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 360 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 372 | ISO4406 | 21 | | 20 | | 14 | | 11 | | 10 | | 8 | |
| 445 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 447 | ISO4406 | 21 | | 19 | | 13 | | 10 | | 9 | | 7 | |
| 824 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 904 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 962 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 963 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 974 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1023 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1039 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1059 | ISO4406 | 21 | | 20 | | 14 | | 13 | ex | 12 | ex | 12 | ex |
| 1062 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1064 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1095 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1097 | ISO4406 | 21 | | 20 | | 15 | | 11 | | 10 | | 8 | |
| 1105 | ISO4406 | 20 | ex | 19 | ex | 13 | | 10 | | 9 | | 7 | |
| 1109 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1299 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1376 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1498 | ISO4406 | 19 | C,G1 | 17 | C,G1 | 11 | C,G5 | ----- | C | ----- | C | ----- | C |
| 1528 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1585 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1587 | ISO4406 | 21 | | 20 | | 14 | | 11 | | 10 | | 9 | |
| 1610 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1631 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1634 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1710 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1720 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1724 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1776 | ISO4406 | 21 | | 20 | | 14 | | 10 | | 9 | | >6 | |
| 1810 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1811 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 2130 | ISO4406 | 21 | | 20 | | 15 | | 12 | ex | 11 | ex | 10 | ex |
| 6075 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 6101 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 6108 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| normality | | n.a. | | OK | | OK | | OK | | OK | | OK | |
| n | | 9 | | 9 | | 9 | | 7 | | 7 | | 6 | |
| outliers | | 1+1ex | | 1+1ex | | 1+1ex | | 0+3ex | | 0+3ex | | 1+2ex | |
| mean (n) | | 21.00 | | 19.78 | | 14.11 | | 10.71 | | 9.43 | | 7.67 | |
| st.dev. (n) | | 0.000 | | 0.441 | | 0.782 | | 0.756 | | 0.535 | | 0.816 | |
| R(calc.) | | 0.00 | | 1.23 | | 2.19 | | 2.12 | | 1.50 | | 2.29 | |
| R(IP564:13) | | 1.02 | | 1.43 | | 2.22 | | unknown | | unknown | | unknown | |

m=mark
D5=D(0.05)
G(1)=G(0.01)
G(5)=G(0.05)

Test results of labs 230, 253, 1059, 1105 and 2130 are excluded as corresponding test results in counts are statistical outliers.
Lab 1498 reported the test results in counts/ml in the table of scale number.
Lab 1498 first reported: 48.6; 10.8; 0.4; 0.1; 0.1; 0.1

≥ 4 µm (c)

Kernel Density

≥ 6 µm (c)

Kernel Density

≥ 14 µm (c)

Kernel Density

≥ 21 µm (c)

Kernel Density

≥ 25 µm (c)

Kernel Density

≥ 30 µm (c)

Kernel Density

Determination of Particle Size Distribution on sample #17031 acc. to IP565, results in counts/ml

| lab | method | ≥4µm (c) | m | ≥6µm (c) | m | ≥14µm (c) | m | ≥21µm (c) | m | ≥25µm (c) | m | ≥30µm (c) | m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 140 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 150 | IP565 | 23374 | | 9554 | | 583 | | 152 | R1 | 58 | G1 | 21 | R1 |
| 171 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 230 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 237 | IP565 | 18128.6 | D5 | 6237.8 | DG5 | 122.3 | | 3.7 | | 0.6 | | 0.1 | |
| 253 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 323 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 333 | IP565 | 23103 | | 9400 | | 248 | | 35 | | 9 | | 2 | |
| 334 | IP565 | 20497 | | 7679 | | 250 | | 17 | | 4 | | 1 | |
| 335 | IP565 | 22145.0 | | 8019.0 | | 455.8 | | 58.5 | | 14.0 | | 2.5 | |
| 360 | IP565 | 22979.4 | | 9041.0 | | 269.4 | | 18.0 | | 4.7 | | 0.8 | |
| 372 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 445 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 447 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 824 | IP565 | 22393 | | 8548 | | 282 | | 23 | | 5 | | 1 | |
| 904 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 962 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 963 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 974 | IP565 | 21780 | | 8601 | | 458 | | 16.8 | | 3.7 | | 1.2 | |
| 1023 | IP577 | 25667.53 | ex,C | 11359.57 | ex,C | 721.03 | ex,C | 148.30 | ex,C | 82.60 | ex,C | ----- | W |
| 1039 | IP565 | 23548 | | 9188 | | 382 | | 43 | | 10 | | 2 | |
| 1059 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1062 | IP565 | 19512 | | 7322 | | 117 | | 2.9 | ex | 0.4 | ex | 0.3 | ex |
| 1064 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1095 | IP565 | 22226 | | 8878 | | 452 | | 58 | | 13 | | 3 | |
| 1097 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1105 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1109 | IP565 | 22635.1 | | 8852.7 | | 191.5 | | 5.3 | | 2.0 | | 0.5 | |
| 1299 | IP577 | 19631.6 | ex,C | 8361.4 | ex | 295.2 | ex | 33.5 | ex | 12.3 | ex | 7.3 | ex |
| 1376 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1498 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1528 | IP565 | 23079.4 | | 9543.9 | | 568.7 | | 108.0 | R1 | 43.9 | G1 | 18.6 | R1 |
| 1585 | IP565 | 21751.5 | | 8030.3 | | 285.1 | | 27.2 | | 8.5 | | 2.1 | |
| 1587 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1610 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1631 | IP565 | 20274.8 | | 8342.0 | | 326.5 | | 30.8 | | 8.8 | | 2.5 | |
| 1634 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1710 | IP565 | 22491.2 | | 8479.6 | | 267.5 | | 17.8 | | 4.1 | | 1.5 | |
| 1720 | IP565 | 19828.1 | | 6483.3 | DG5 | 308.4 | | 32.0 | | 10.4 | | 3.1 | |
| 1724 | IP565 | 19904.9 | | 8422 | | 335 | | 27.3 | | 5.5 | | 0.6 | |
| 1776 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1810 | IP565 | ----- | W | ----- | W | ----- | W | ----- | W | ----- | W | ----- | W |
| 1811 | IP565 | 24062.1 | | 9357.0 | | 343.4 | | 31.9 | | 7.0 | | 2.2 | |
| 2130 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 6075 | IP565 | 31389.8 | D1 | 8965.9 | | 316.8 | | 26.7 | | 6.8 | | 1.3 | |
| 6101 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 6108 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| | | | | | | | | | | | | | |
| normality | | OK | | OK | | OK | | OK | | OK | | OK | |
| n | | 18 | | 18 | | 20 | | 17 | | 17 | | 17 | |
| outliers | | 2+2ex | | 2+2ex | | 0+2ex | | 2+3ex | | 2+3ex | | 2+2ex | |
| mean (n) | | 21977 | | 8679 | | 328.1 | | 27.76 | | 6.89 | | 1.61 | |
| st.dev. (n) | | 1401.3 | | 640.6 | | 126.55 | | 15.261 | | 3.714 | | 0.896 | |
| R(calc.) | | 3924 | | 1794 | | 354.3 | | 42.73 | | 10.40 | | 2.51 | |
| R(IP565:13) | | 2388 | | 1829 | | 168.1 | | 23.83 | | 8.08 | | 2.70 | |

m=mark
D1=D(0.01) / D5=D(0.05)
DG5=DG(0.05) / G(1)=G(0.01) / R1=R(0.01)

Lab 1023 reported to use Pamas and test method IP564; Pamas is in accordance with test method IP577, therefore test method IP577 is given by iis.
Labs 1023 and 1299: test results are excluded as the reported equipment is Pamas, see also §4.1.
Lab 1023 reported the test results in counts/ml in the table of scale number. Lab 1023 first reported respectively: 2566753; 1135957; 72103; 14830; 14830; 14830 counts/ml.
Lab 1063: the test results at ≥ 21, 25 and 30 µm are excluded as corresponding test results in ISO4406 scale number are statistical outliers.
Lab 1810 first reported: 6417; 2685; 83; 7; 3; 1.4
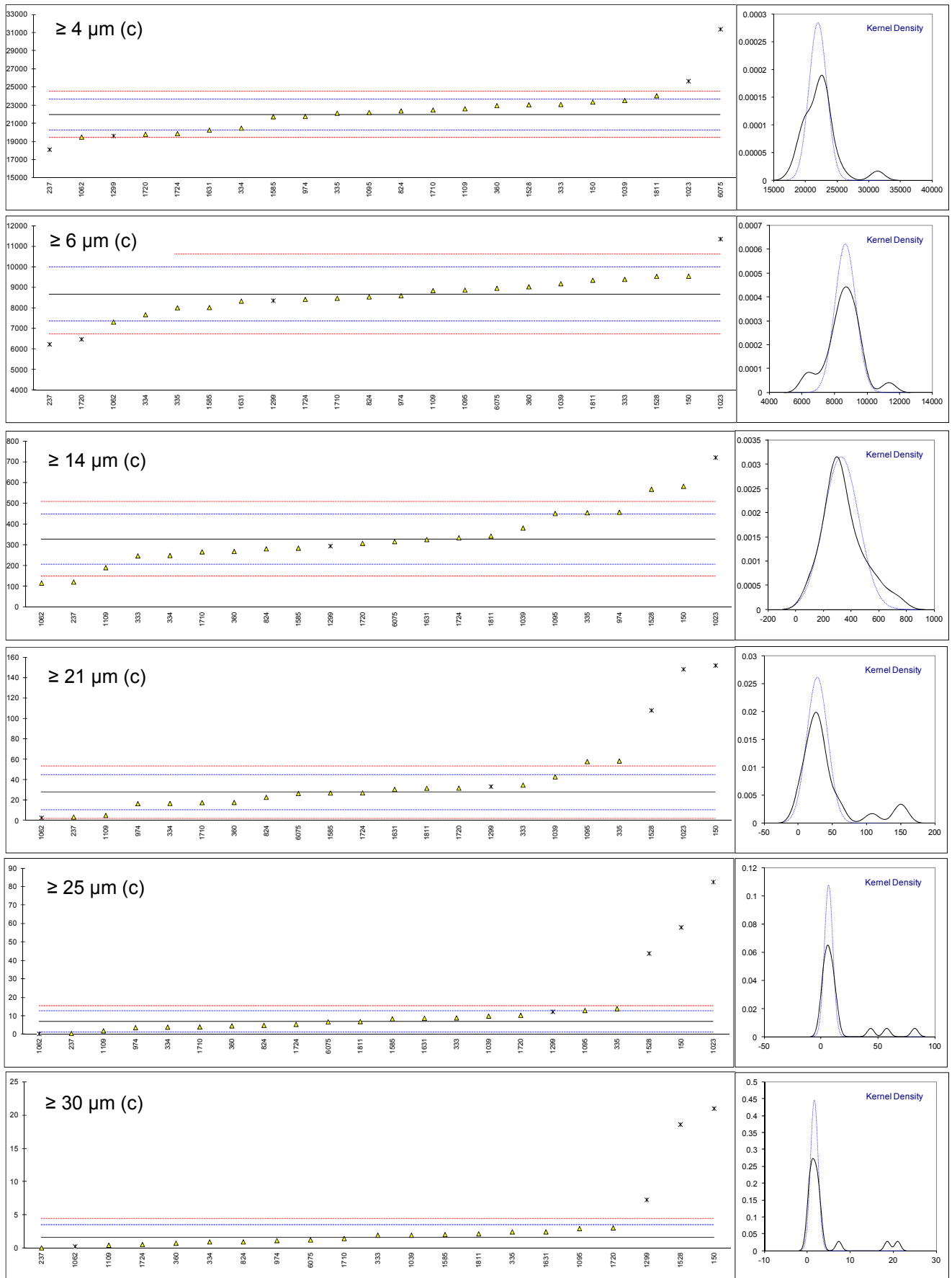
Determination of Particle Size Distribution by IP565 on sample #17031 acc. to ISO4406 scale, results in scale number

| lab | method | ≥4µm (c) | m | ≥6µm (c) | m | ≥14µm (c) | m | ≥21µm (c) | m | ≥25µm (c) | m | ≥30µm (c) | m |
|-----|--------|----------|---|----------|---|-----------|---|-----------|---|-----------|---|-----------|---|
| 140 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 150 | ISO4406 | 22 | | 20 | | 16 | | 14 | ex | 13 | ex | 12 | ex |
| 171 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 230 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 237 | ISO4406 | 21 | ex | 20 | ex | 14 | | ≥9 | | ≥6 | | ≥4 | |
| 253 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 323 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 333 | ISO4406 | 22 | | 20 | | 15 | | 12 | | 10 | | 8 | |
| 334 | ISO4406 | 22 | | 20 | | 15 | | 11 | | 9 | | 7 | |
| 335 | ISO4406 | 22 | | 20 | | 16 | | 13 | | 11 | | 8 | |
| 360 | ISO4406 | 22 | | 20 | | 15 | | 11 | | 9 | | 7 | |
| 372 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 445 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 447 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 824 | ISO4406 | 22 | | 20 | | 15 | | 12 | | 10 | | 7 | |
| 904 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 962 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 963 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 974 | ISO4406 | 22 | | 20 | | 16 | | 11 | | 9 | | 7 | |
| 1023 | ISO4406 | ----- | C | ----- | C | ----- | C | ----- | C | ----- | C | ----- | C |
| 1039 | ISO4406 | 22 | | 20 | | 16 | | 13 | | 11 | | 8 | |
| 1059 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1062 | ISO4406 | 21 | | 20 | | 14 | | 9 | D5 | 6 | G5 | 5 | C,D5 |
| 1064 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1095 | ISO4406 | 22 | | 20 | | 16 | | ----- | | ----- | | ----- | |
| 1097 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1105 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1109 | | 22 | | 20 | | 15 | | 10 | | 8 | | 6 | |
| 1299 | ISO4406 | 21 | ex | 20 | ex | 15 | ex | 12 | ex | 11 | ex | 10 | ex |
| 1376 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1498 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1528 | ISO4406 | 22 | | 20 | | 16 | | 14 | ex | 13 | ex | 11 | ex |
| 1585 | ISO4406 | 22 | | 20 | | 15 | | 12 | | 10 | | 8 | |
| 1587 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1610 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1631 | ISO4406 | 22 | | 20 | | 16 | | 12 | | 10 | | 8 | |
| 1634 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1710 | ISO4406 | 22 | | 20 | | 15 | | 11 | | 9 | | 8 | |
| 1720 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1724 | ISO4406 | 21 | | 20 | | 16 | | 12 | | 10 | | 6 | |
| 1776 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1810 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 1811 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 2130 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 6075 | | 22 | ex | 20 | | 15 | | 12 | | 10 | | 7 | |
| 6101 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| 6108 | | ----- | | ----- | | ----- | | ----- | | ----- | | ----- | |
| | | | | | | | | | | | | | |
| normality | | not OK | | n.a. | | OK | | OK | | OK | | OK | |
| n | | 16 | | 17 | | 18 | | 13 | | 13 | | 13 | |
| outliers | | 0+3ex | | 0+2ex | | 0+1ex | | 1+3ex | | 1+3ex | | 1+3ex | |
| mean (n) | | 21.88 | | 20.00 | | 15.33 | | 11.69 | | 9.69 | | 7.31 | |
| st.dev. (n) | | 0.342 | | 0.000 | | 0.686 | | 0.855 | | 0.855 | | 0.751 | |
| R(calc.) | | 0.96 | | 0.00 | | 1.92 | | 2.39 | | 2.39 | | 2.10 | |
| R(IP565:13) | | 1.03 | | 1.03 | | 1.37 | | unknown | | unknown | | unknown | |

m=mark
D5=D(0.05)

Lab 1299: test results are excluded as the reported equipment is Pamas (test method IP577), see also §4.1.
Lab 1023 reported the test results of counts/ml in the table of scale number.
Lab 1062 first reported: 0
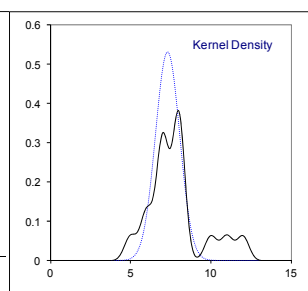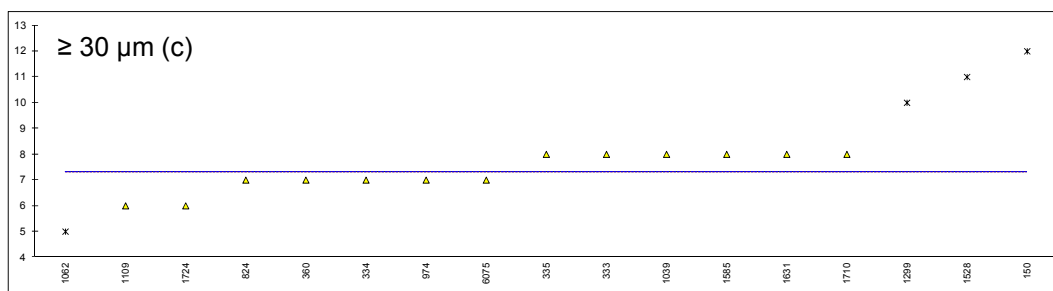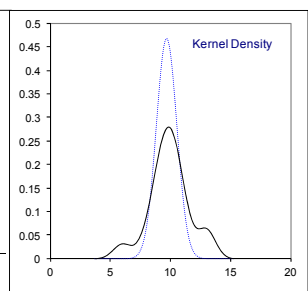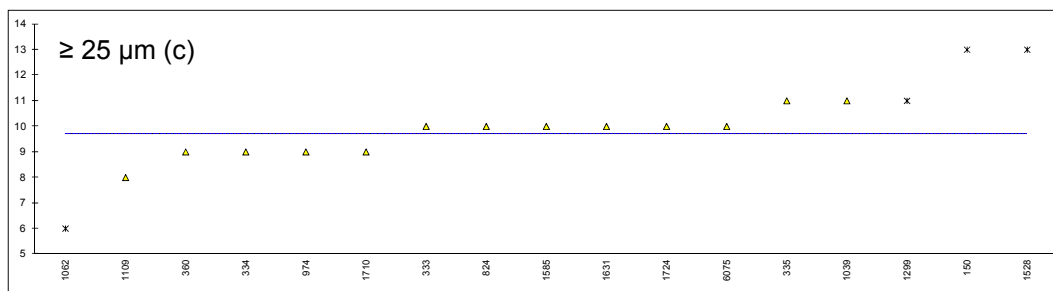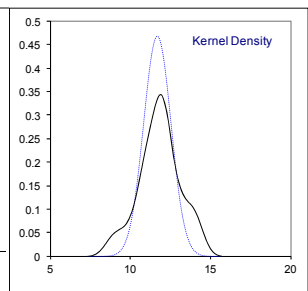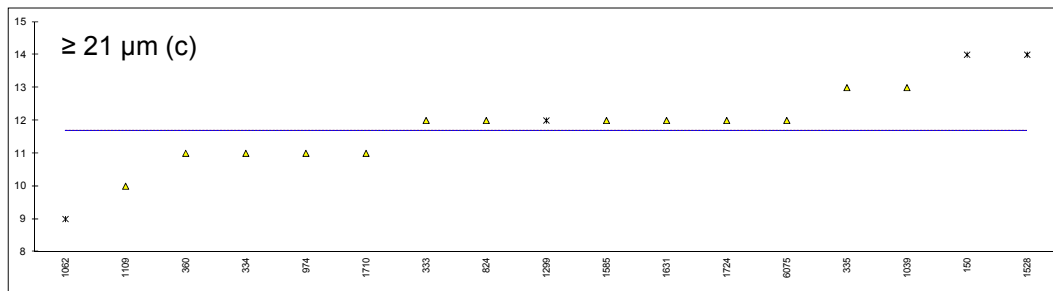
**APPENDIX 2**

**z-scores distillation ASTM D86.**

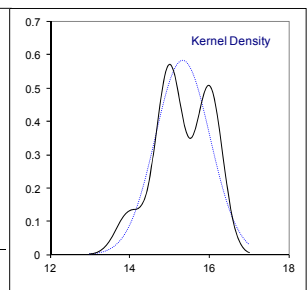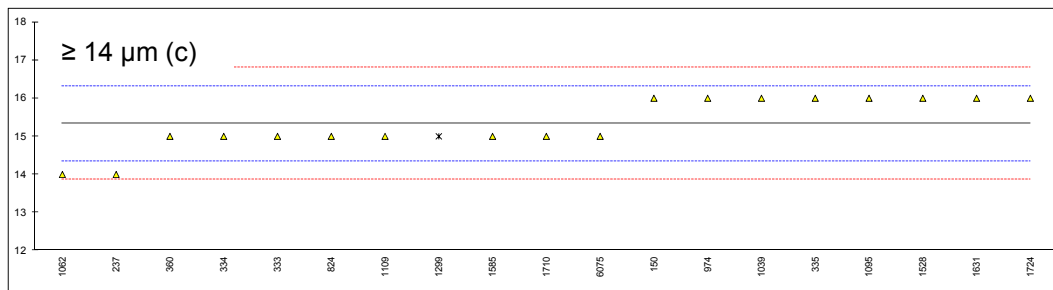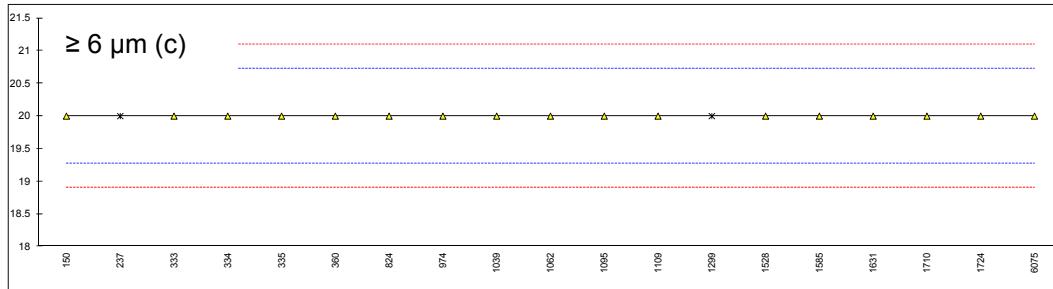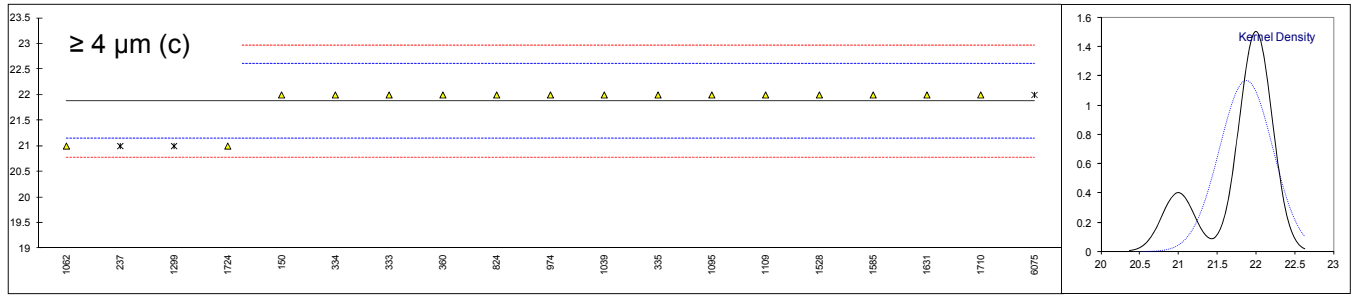| lab | method | IBP | 10% rec. | 50% rec. | 90%rec. | FBP |
|-----|--------|-----|----------|----------|---------|-----|
| 120 | D86-A | 0.09 | -1.17 | -0.83 | -0.16 | -0.72 |
| 131 | D86-A | 0.71 | 0.04 | 0.38 | 0.84 | -0.64 |
| 132 | D86-A | 0.78 | 0.49 | 0.10 | 0.07 | -0.68 |
| 140 | D86-A | -1.15 | -0.34 | 0.10 | -0.77 | -0.68 |
| 150 | D86-A | -0.11 | -0.04 | -0.09 | 0.69 | -0.56 |
| 158 | | ----- | ----- | ----- | ----- | ----- |
| 159 | D86-A | 1.75 | 0.49 | 0.94 | 1.37 | 0.94 |
| 169 | D86-A | 0.13 | 0.34 | -0.18 | -0.54 | -0.64 |
| 171 | D86-A | 0.65 | -0.04 | -2.14 | -1.07 | -1.11 |
| 175 | D86-A | -0.32 | 0.04 | 0.66 | 2.06 | 0.62 |
| 177 | D86-A | -1.88 | -0.34 | 0.94 | 1.07 | 0.94 |
| 194 | D86-A | -0.91 | -0.34 | -0.46 | -1.15 | 0.07 |
| 228 | D86 | -0.81 | -1.47 | -2.70 | -3.14 | -0.44 |
| 230 | D86-A | 0.58 | 0.04 | -1.02 | 0.76 | -0.40 |
| 237 | D86-M | 0.58 | -0.72 | -0.83 | -0.46 | -0.44 |
| 238 | D86-M | -0.46 | -0.72 | -2.70 | -2.76 | -0.64 |
| 253 | D86-M | -1.15 | -0.34 | -0.83 | -1.61 | -0.24 |
| 273 | D86-A | 0.85 | -0.57 | 0.47 | 0.15 | 0.98 |
| 317 | D86-A | -1.39 | -0.49 | 0.19 | -0.23 | -0.76 |
| 323 | D86-A | 0.16 | -0.34 | 0.01 | -0.31 | -0.84 |
| 333 | D86-A | 0.89 | 0.26 | 0.01 | -0.61 | 0.54 |
| 334 | D86-A | 1.10 | -0.64 | -0.74 | 1.99 | 0.70 |
| 335 | D86-A | -0.01 | -0.04 | 0.10 | 1.76 | -0.52 |
| 336 | D86-A | 0.96 | 0.41 | 0.66 | 0.46 | -0.09 |
| 353 | IP123-A | 1.10 | 0.26 | 0.66 | 1.68 | 1.02 |
| 360 | D86-A | 0.27 | 1.09 | 1.13 | 1.45 | -0.17 |
| 372 | D86-A | 0.09 | 0.41 | 0.19 | 0.46 | -0.05 |
| 391 | D86-A | 0.23 | -0.42 | 0.75 | 0.38 | 0.90 |
| 398 | D86-A | 1.61 | 0.79 | 0.38 | -0.08 | -0.13 |
| 399 | D86-A | 0.54 | 0.87 | 0.66 | -0.69 | -0.05 |
| 445 | IP123-A | -1.39 | -0.94 | -0.27 | 0.23 | -0.17 |
| 447 | D86-A | -2.29 | -0.94 | -0.83 | 0.84 | -0.40 |
| 463 | D86-A | 1.13 | 0.64 | 0.10 | -0.46 | 0.82 |
| 468 | | ----- | ----- | ----- | ----- | ----- |
| 473 | | 0.37 | -0.11 | 0.01 | 0.07 | 0.47 |
| 603 | D86-A | 1.37 | 1.09 | 1.22 | 0.46 | 0.74 |
| 604 | D86-A | -1.22 | -1.62 | -1.95 | -1.76 | -1.31 |
| 608 | D86-M | 0.58 | 0.79 | 1.97 | 0.69 | 0.35 |
| 631 | D86-A | 0.37 | -0.19 | -0.83 | 1.14 | -0.68 |
| 663 | D86-A | -1.44 | 0.22 | 0.85 | 1.60 | 0.54 |
| 671 | | ----- | ----- | ----- | ----- | ----- |
| 824 | D86-A | 0.89 | 0.64 | 0.57 | 0.53 | 1.14 |
| 825 | D86-A | 0.33 | 0.34 | 0.29 | 0.15 | -0.05 |
| 904 | D86-A | -0.46 | -1.62 | -1.67 | -1.68 | -0.91 |
| 962 | | ----- | ----- | ----- | ----- | ----- |
| 963 | | ----- | ----- | ----- | ----- | ----- |
| 974 | D86-A | -0.08 | -1.17 | -1.49 | -1.61 | -0.48 |
| 998 | D86-M | 0.06 | 0.41 | -0.83 | -0.46 | 1.14 |
| 1006 | D86-A | 1.37 | 1.32 | 0.94 | 0.61 | 0.51 |
| 1023 | D86-A | 1.13 | 1.47 | 0.94 | 0.15 | 0.98 |
| 1039 | D2887 | -0.22 | -0.19 | 1.31 | -0.54 | 0.70 |
| 1049 | D86-A | 0.68 | 0.64 | 0.38 | -0.08 | 0.74 |
| 1059 | D86-A | -0.60 | 0.04 | -0.65 | -1.07 | -0.40 |
| 1062 | D86-A | -0.74 | 0.56 | 1.03 | 0.23 | -0.24 |
| 1064 | D86-A | 0.54 | 0.71 | 1.41 | 1.99 | 0.86 |
| 1080 | | ----- | ----- | ----- | ----- | ----- |
| 1082 | D86-A | -0.22 | 1.17 | 0.85 | 0.53 | 0.43 |
| 1097 | ISO3405-A | 0.89 | -0.04 | 0.47 | 0.69 | 0.23 |
| 1105 | D86-A | -0.15 | -0.26 | -0.37 | -2.76 | -0.72 |
| 1109 | D86-A | -0.32 | -0.72 | -0.65 | -0.46 | -0.13 |
| 1121 | D86-M | -1.67 | -1.85 | -1.77 | -1.99 | -1.23 |
| 1126 | | -0.25 | 0.79 | 2.99 | 0.53 | 0.98 |
| 1146 | ISO3405-A | -0.49 | 0.04 | 0.29 | 0.23 | -0.17 |
| 1150 | ISO3405-A | 0.92 | 1.09 | 0.19 | -0.54 | 2.40 |
| 1155 | ISO3405-A | 0.51 | 0.11 | -0.65 | -1.15 | -0.36 |
| 1161 | ISO3405-A | -1.29 | 0.34 | 0.94 | 0.00 | 0.07 |
| 1191 | D86-A | -1.22 | 1.32 | 0.57 | -0.77 | 0.15 |
| 1205 | D86-A | 1.34 | 1.09 | 1.41 | 0.46 | 0.39 |
| 1212 | D86-A | -0.08 | -0.34 | 0.29 | 1.30 | 0.54 |
| 1237 | ISO3405-M | 1.75 | -0.42 | -0.55 | -0.61 | 0.03 |
| 1284 | D86-A | 0.13 | -0.42 | -0.93 | -0.46 | 0.39 |

| lab | method | IBP | 10% rec. | 50% rec. | 90%rec. | FBP |
|---|---|---|---|---|---|---|
| 1297 | D86-A | -0.46 | -0.11 | -0.55 | -1.84 | -0.52 |
| 1299 | D86-A | 0.16 | 0.11 | 0.38 | 0.76 | 0.66 |
| 1318 | D86-A | -0.94 | 0.04 | -0.09 | -0.54 | -0.28 |
| 1347 | D86-M | 1.20 | 0.64 | 0.36 | -1.00 | 0.25 |
| 1348 | D86-A | -0.43 | 0.79 | -0.83 | -1.23 | -0.84 |
| 1372 | D86-M | -0.46 | -1.47 | -0.83 | -0.84 | -0.05 |
| 1376 | D86-A | 0.30 | 0.34 | 0.01 | -0.31 | 0.51 |
| 1379 | | ----- | ----- | ----- | ----- | ----- |
| 1397 | D86-A | -0.60 | -0.11 | -0.37 | -1.46 | -0.36 |
| 1399 | D86-A | -0.81 | -1.09 | -0.74 | 0.92 | -0.88 |
| 1412 | D86-M | 0.75 | -0.34 | -0.83 | -1.23 | -2.02 |
| 1429 | D86-A | -0.87 | -1.02 | -1.21 | -1.00 | -1.19 |
| 1491 | D86-A | 0.33 | 0.49 | 0.66 | 1.14 | 0.94 |
| 1496 | D86-A | 0.09 | 2.00 | 1.59 | 1.99 | 0.39 |
| 1498 | D86-A | -0.53 | 0.11 | 0.94 | 1.68 | 1.06 |
| 1528 | D86-A | 1.16 | 0.71 | 1.03 | 1.14 | 0.51 |
| 1531 | D86-A | 0.06 | -0.34 | 1.03 | 0.99 | 0.78 |
| 1538 | D86-A | -0.15 | -0.72 | -1.11 | -1.99 | -0.72 |
| 1585 | D86-A | 0.06 | 0.41 | 0.38 | -1.61 | 0.51 |
| 1586 | D86-A | -0.22 | 0.11 | -0.09 | 1.60 | 0.11 |
| 1587 | D86-A | -0.43 | 0.26 | 0.57 | -0.69 | -0.20 |
| 1610 | D86-A | -0.43 | -0.57 | -0.55 | 0.07 | -0.52 |
| 1631 | D86-A | 0.82 | 0.64 | 0.57 | 0.23 | 0.86 |
| 1634 | D86-A | -0.74 | 0.64 | 0.19 | 1.07 | 0.03 |
| 1710 | D86-A | 0.54 | 0.87 | 0.75 | 0.92 | 0.19 |
| 1720 | D86-A | -2.12 | 0.04 | 0.75 | -0.54 | 1.10 |
| 1724 | D86-A | -0.32 | -0.11 | 0.47 | -0.08 | 0.07 |
| 1740 | D86-A | 0.96 | 0.94 | 0.19 | -0.16 | -0.56 |
| 1755 | D86-A | -0.63 | 0.04 | 0.10 | 1.07 | -0.72 |
| 1757 | D86-A | -0.25 | -0.11 | 0.01 | 1.45 | -0.91 |
| 1776 | D86-A | -2.05 | -0.42 | 0.01 | 0.76 | -0.28 |
| 1810 | D86-A | -0.43 | -1.02 | -1.77 | -1.61 | -1.31 |
| 1811 | D86-A | -0.49 | -0.87 | -1.39 | -1.15 | -0.80 |
| 1883 | D86-M | 0.92 | -2.22 | -0.83 | -0.84 | -0.44 |
| 2129 | D86-A | -0.84 | 0.04 | -0.46 | -0.31 | -0.48 |
| 2130 | IP123-A | 0.99 | 1.02 | 0.75 | 0.53 | 0.35 |
| 6049 | D86-A | 0.78 | -0.34 | -0.83 | 0.15 | -0.48 |
| 6075 | D86-A | -0.74 | -0.94 | -0.09 | 0.00 | 0.98 |
| 6101 | D86-A | 0.58 | -0.04 | 0.38 | 0.07 | 0.27 |
| 6103 | ISO3405-A | 0.11 | 0.11 | 0.05 | 1.07 | -0.26 |
| 6108 | | ----- | ----- | ----- | ----- | ----- |

**z-scores Particle Size Distribution on sample #17031 acc. to IP564 and IP565, results in counts/ml**

| lab | method | ≥4 µm | ≥6 µm | ≥14 µm | ≥21 µm | ≥25 µm | ≥30 µm | method | ≥4 µm | ≥6 µm | ≥14 µm | ≥21 µm | ≥25 µm | ≥30 µm |
|-----|--------|-----|-----|-----|-----|-----|-----|--------|-----|-----|-----|-----|-----|-----|
| | | | | IP 564 | | | | | | | IP565 | | | |
| 140 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 150 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 1.64 | 1.34 | 4.24 | 14.60 | 17.70 | 20.11 |
| 171 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 230 | IP564 | -4.73 | -3.31 | 1.37 | 13.05 | 33.49 | 78.03 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 237 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | -4.51 | -3.74 | -3.43 | -2.83 | -2.18 | -1.57 |
| 253 | IP564 | -0.78 | 0.19 | 7.50 | 1.21 | 0.00 | -0.45 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 323 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 333 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 1.32 | 1.10 | -1.33 | 0.85 | 0.73 | 0.40 |
| 334 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | -1.73 | -1.53 | -1.30 | -1.27 | -1.00 | -0.63 |
| 335 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 0.20 | -1.01 | 2.13 | 3.61 | 2.46 | 0.92 |
| 360 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 1.18 | 0.55 | -0.98 | -1.15 | -0.76 | -0.84 |
| 372 | IP564 | -0.47 | -1.18 | -1.33 | 0.14 | 0.62 | 0.78 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 445 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 447 | IP564 | -2.99 | -3.80 | -3.81 | -1.12 | -0.89 | -0.70 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 824 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 0.49 | -0.20 | -0.77 | -0.56 | -0.65 | -0.63 |
| 904 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 962 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 963 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 974 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | -0.23 | -0.12 | 2.16 | -1.29 | -1.10 | -0.43 |
| 1023 | | ----- | ----- | ----- | ----- | ----- | ----- | IP577 *) | 4.33 | 4.10 | 6.54 | 14.16 | 26.22 | ----- |
| 1039 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 1.85 | 0.78 | 0.90 | 1.79 | 1.08 | 0.40 |
| 1059 | IP564 | -1.22 | -1.11 | 0.31 | 5.61 | 13.77 | 32.72 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1062 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | -2.89 | -2.08 | -3.52 | -2.92 | -2.25 | -1.36 |
| 1064 | IP564 | 1.75 | 0.01 | -0.31 | -0.35 | -0.96 | -1.07 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1095 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 0.29 | 0.30 | 2.06 | 3.55 | 2.12 | 1.44 |
| 1097 | IP564 | 3.34 | 3.09 | 2.24 | 1.15 | 1.09 | 0.66 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1105 | IP564 | -7.06 | -4.83 | -2.73 | -0.72 | -0.73 | -0.21 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1109 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 0.77 | 0.27 | -2.28 | -2.64 | -1.69 | -1.15 |
| 1299 | | ----- | ----- | ----- | ----- | ----- | ----- | IP577 | -2.75 | -0.49 | -0.55 | 0.67 | 1.87 | 5.90 |
| 1376 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1498 | IP564 | -10.73 | -7.69 | -4.55 | -1.28 | -0.79 | -0.45 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1528 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 1.30 | 1.32 | 4.01 | 9.43 | 12.82 | 17.62 |
| 1585 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | -0.26 | -0.99 | -0.72 | -0.07 | 0.56 | 0.51 |
| 1587 | IP564-B | 0.43 | 0.45 | 0.30 | 1.59 | 2.29 | 2.39 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1610 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1631 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | -1.99 | -0.52 | -0.03 | 0.36 | 0.66 | 0.92 |
| 1634 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1710 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 0.61 | -0.31 | -1.01 | -1.17 | -0.97 | -0.12 |
| 1720 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | -2.52 | -3.36 | -0.33 | 0.50 | 1.22 | 1.54 |
| 1724 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | -2.43 | -0.39 | 0.11 | -0.05 | -0.48 | -1.05 |
| 1776 | IP564 | 3.13 | 3.02 | -0.45 | -0.62 | -0.63 | -0.95 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1810 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | ----- | ----- | ----- | ----- | ----- | ----- |
| 1811 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 2.45 | 1.04 | 0.25 | 0.49 | 0.04 | 0.61 |
| 2130 | IP564 | 1.54 | 2.64 | 4.41 | 4.43 | 6.78 | 4.50 | | ----- | ----- | ----- | ----- | ----- | ----- |
| 6075 | | ----- | ----- | ----- | ----- | ----- | ----- | IP565 | 11.04 | 0.44 | -0.19 | -0.13 | -0.03 | -0.32 |
| 6101 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 6108 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |

*) Lab 1023 reported to use Pamas and test method IP564; Pamas is in accordance with test method IP577

**z-scores Particle Size Distribution on sample #17031 by IP564 and IP565 acc. to ISO4406 scale, results in scale number**

| | | IP 564 | | | | | | IP565 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| lab | method | ≥4 µm | ≥6 µm | ≥14 µm | ≥21 µm | ≥25 µm | ≥30 µm | method | ≥4 µm | ≥6 µm | ≥14 µm | ≥21 µm | ≥25 µm | ≥30 µm |
| 140 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 150 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | 1.36 | ----- | ----- | ----- |
| 171 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 230 | ISO4406 | 0.00 | -1.52 | 1.12 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 237 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | -2.39 | 0.00 | -2.72 | ----- | ----- | ----- |
| 253 | ISO4406 | 0.00 | 0.44 | 1.12 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 323 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 333 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | -0.68 | ----- | ----- | ----- |
| 334 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | -0.68 | ----- | ----- | ----- |
| 335 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | 1.36 | ----- | ----- | ----- |
| 360 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | -0.68 | ----- | ----- | ----- |
| 372 | ISO4406 | 0.00 | 0.44 | -0.14 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 445 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 447 | ISO4406 | 0.00 | -1.52 | -1.40 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 824 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | -0.68 | ----- | ----- | ----- |
| 904 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 962 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 963 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 974 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | 1.36 | ----- | ----- | ----- |
| 1023 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1039 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | 1.36 | ----- | ----- | ----- |
| 1059 | ISO4406 | 0.00 | 0.44 | -0.14 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1062 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | -2.39 | 0.00 | -2.72 | ----- | ----- | ----- |
| 1064 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1095 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | 1.36 | ----- | ----- | ----- |
| 1097 | ISO4406 | 0.00 | 0.44 | 1.12 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1105 | ISO4406 | -2.75 | -1.52 | -1.40 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1109 | | ----- | ----- | ----- | ----- | ----- | ----- | | 0.34 | 0.00 | -0.68 | ----- | ----- | ----- |
| 1299 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | -2.39 | 0.00 | -0.68 | ----- | ----- | ----- |
| 1376 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1498 | ISO4406 | -5.49 | -5.44 | -3.92 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1528 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | 1.36 | ----- | ----- | ----- |
| 1585 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | -0.68 | ----- | ----- | ----- |
| 1587 | ISO4406 | 0.00 | 0.44 | -0.14 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1610 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1631 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | 1.36 | ----- | ----- | ----- |
| 1634 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1710 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | 0.34 | 0.00 | -0.68 | ----- | ----- | ----- |
| 1720 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1724 | | ----- | ----- | ----- | ----- | ----- | ----- | ISO4406 | -2.39 | 0.00 | 1.36 | ----- | ----- | ----- |
| 1776 | ISO4406 | 0.00 | 0.44 | -0.14 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1810 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 1811 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 2130 | ISO4406 | 0.00 | 0.44 | 1.12 | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 6075 | | ----- | ----- | ----- | ≥25 | ≥25 | ----- | | 0.34 | 0.00 | -0.68 | ≥25 | ----- | ----- |
| 6101 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |
| 6108 | | ----- | ----- | ----- | ----- | ----- | ----- | | ----- | ----- | ----- | ----- | ----- | ----- |

## APPENDIX 3

## Equipment used in Particle Size distribution

| lab | Equipment | Test Method based on equipment | Test Method reported | Calibration method reported | Remark |
|-----|-----------|-------------------------------|---------------------|----------------------------|--------|
| 140 | | | | | |
| 150 | Stanhope-Seta | IP565 | IP565 | | |
| 171 | | | | | |
| 230 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 237 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 253 | Parker Hannifin | IP564 | IP564 | | |
| 323 | | | | | |
| 333 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 334 | Stanhope-Seta | IP565 | IP565 | | |
| 335 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 360 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 372 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 445 | | | | | |
| 447 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 824 | Stanhope-Seta | IP565 | IP565 | | |
| 904 | | | | | |
| 962 | | | | | |
| 963 | | | | | |
| 974 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1023 | Pamas | **IP577** | **IP564** | ISO11171 | test method not in accordance with equipment |
| 1039 | Stanhope-Seta | IP565 | IP565 | | |
| 1059 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 1062 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1064 | Parker Hannifin | IP564 | IP564 | | |
| 1095 | Stanhope-Seta | IP565 | IP565 | | |
| 1097 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 1105 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 1109 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1299 | Pamas | IP577 | IP577 | ISO11171 | |
| 1376 | | | | | |
| 1498 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 1528 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1585 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1587 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 1610 | | | | | |
| 1631 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1634 | | | | | |
| 1710 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1720 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1724 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1776 | Parker Hannifin | IP564 | IP564 | | |
| 1810 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 1811 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 2130 | Parker Hannifin | IP564 | IP564 | ISO11171 | |
| 6075 | Stanhope-Seta | IP565 | IP565 | ISO11171 | |
| 6101 | | | | | |
| 6108 | | | | | |

**APPENDIX 4**

**Number of participants in iis17J01+ iis17J01PS per country**

```
 2 labs in AFGHANISTAN
 1 lab in AUSTRALIA
 1 lab in AZERBAIJAN
 4 labs in BELGIUM
 4 labs in BULGARIA
 1 lab in CHILE
 1 lab in CHINA, People's Republic
 1 lab in CROATIA
 1 lab in CYPRUS
 2 labs in CZECH REPUBLIC
 1 lab in DJIBOUTI
 1 lab in EGYPT
 1 lab in ESTONIA
 2 labs in FINLAND
 5 labs in FRANCE
 1 lab in GEORGIA
 1 lab in GERMANY
 3 labs in GREECE
 1 lab in GUAM
 2 labs in HUNGARY
 1 lab in IRELAND
 3 labs in ITALY
 3 labs in LEBANON
 3 labs in MALAYSIA
 1 lab in MALTA
 1 lab in MARTINIQUE
 1 lab in MAURITIUS
 1 lab in MOROCCO
 5 labs in NETHERLANDS
 2 labs in NIGERIA
 3 labs in NORWAY
 1 lab in PHILIPPINES
 1 lab in POLAND
 3 labs in PORTUGAL
 1 lab in QATAR
 1 lab in ROMANIA
 1 lab in RUSSIAN FEDERATION
 2 labs in SAUDI ARABIA
 1 lab in SERBIA
 2 labs in SLOVENIA
 2 labs in SOUTH AFRICA
 2 labs in SOUTH KOREA
 1 lab in SPAIN
 1 lab in SUDAN
 4 labs in SWEDEN
 1 lab in TAIWAN
 1 lab in THAILAND
 1 lab in TOGO
 4 labs in TURKEY
 2 labs in UNITED ARAB EMIRATES
 7 labs in UNITED KINGDOM
12 labs in UNITED STATES OF AMERICA
 1 lab in URUGUAY
 1 lab in VIETNAM
```

**APPENDIX 5**

**Abbreviations**:

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

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