Results of Proficiency Test
Jet Fuel A1
March 2014

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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Report: iis14J01

May 2014

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1 INTRODUCTION

Since 1995, the Institute for Interlaboratory Studies organises every year proficiency tests for Jet Fuel A1. The interlaboratory study on Jet Fuel of March 2012 was extended with a PT for the determination for Particle Size Distribution (PS). In the annual proficiency testing program of 2013/2014, it was decided to continue proficiency tests on Jet Fuel and Jet Fuel Particle Size. In the interlaboratory study for Jet Fuel 109 laboratories from 49 different countries have participated and for Particle Size Distribution 44 participants in 27 countries have participated. See appendix 5 for the number of participants per country. In this report, the results of the two proficiency tests are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2 Set up

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. In the main Jet Fuel round robin, it was decided to send two identical samples (2*1 liter bottle, labelled #14016) for the analyses according to 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 the Particle Size round robin, it was decided to send one sample (0.5 L bottle, labelled #14017).
The participants were requested to report the analytical results using the indicated units on the report form and to report rounded and unrounded results. The unrounded 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 ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentially of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: 'Protocol for the Organisation, Statistics and Evaluation of April 2014' (iis-protocol, version 3.3). This protocol can be downloaded from the iis website http://www.iisnl.com.

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 (MAIN SAMPLE)

The necessary bulk material was obtained from an intermediary in the United Kingdom. Approximately 250 litre bulk material was homogenised in a mixing vessel. Out of this batch 236 amber glass bottles of one litre were filled, closed with inner and outer caps and labelled #14016. The homogeneity of the subsamples #14016 was checked by the determination of Density in accordance with ASTM D4052 on 10 stratified randomly selected samples.

	Density @ 15°C in kg/m^3
Sample #14016-1	793.96
Sample #14016-2	799.96
Sample #14016-3	793.96
Sample #14016-4	793.96
Sample #14016-5	793.96
Sample #14016-6	793.96
Sample #14016-7	793.96
Sample #14016-8	793.96
Sample #14016-9	793.96
Sample #14016-10	793.96

table 1: homogeneity test results of sub samples #14016

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

	Density @ 15°C in kg/m^3
r (observed)	0.00
reference method	D4052:11
0.3 x R (ref. method)	0.15

Table 2: evaluation of repeatability of subsamples #14016

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

2.4.2 JET FUEL PARTICLE SIZE DETERMINATION

The second bulk material was obtained from a participating laboratory. Approximately 34 litre bulk material was homogenized. Out of this batch 62 amber glass bottles of 0.5 liter were filled, closed with inner and outer caps and labelled #14017. The homogeneity of the subsamples #14017 was checked by the determination of Particle Size Distribution in accordance with IP564 on seven stratified randomly selected samples.

	> 4 µm	> 6 µm	> 14 µm
Sample #14017-1	8275	1443	35
Sample #14017-2	8255	1411	34
Sample #14017-3	8187	1429	37
Sample #14017-4	8381	1500	47
Sample #14017-5	8156	1438	38
Sample #14017-6	8065	1387	34
Sample #14017-7	8195	1451	44

Table 3: homogeneity test results of sub samples #14017

From the above test results, the calculated repeatabilities were calculated and compared with the target repeatabilities of the reference method in agreement with the procedure of ISO13528, Annex B2 in the next table:

	> 4 µm	> 6 µm	> 14 µm
r (observed)	280	99	14
reference method	IP564:13	IP564:13	IP564:13
r (ref. method)	1178	309	22

Table 4: evaluation of repeatabilities of subsamples #14017

The calculated repeatabilities for the particle sizes >4 µm, > 6 µm and > 14 µm were in agreement with the corresponding target repeatabilities of the respective reference method. Therefore, homogeneity of the subsamples of #14017 was assumed.

Depending on their registration to each of the participating laboratories 2 * 1 litre bottle of Jet Fuel A1 labelled #14016 and/or a 0.5 litre bottle of Jet Fuel PS labelled #14017 was/were sent on February 26, 2014.

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 D4306:13. The material has been found sufficiently stable for the period of the proficiency test.

2.6 ANALYSIS

The participants were requested to determine on sample #14016: Aromatics by FIA, Aromatics by HPLC (in %M/M and %V/V), Colour Saybolt (ASTM D156 and ASTM 6045), Density @15°C, Distillation (IBP, 10%, 50%, 90% recovered, FBP, Residue and Loss), Existent Gum, Flash Point, Freezing Point (Manual and Automated), JFTOT, Mercaptans, MSEP, Naphthalenes, Smoke Point, Specific Energy (on Sulphur free basis), Total Acidity, Total Sulphur and Viscosity @ -20°C. The participants were requested to determine Particle Size only on sample #14017.

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

To get comparable results a detailed report form, on which the units were prescribed as well as some of the required standards and a letter of instructions were prepared and made available for download on the iis website (www.iisnl.com). A SDS and a form to confirm receipt of the samples were added to the sample package.

3 RESULTS

During four weeks after sample despatch, the results of the individual laboratories were gathered. The original data are tabulated per determination in the appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after deadline, a reminder fax was sent to those laboratories that had not yet reported. Shortly after the deadline, the available results were screened for suspect data. A 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 (raw data of the) reported results. Additional or corrected results have been used for data analysis and the original results are placed under 'Remarks' in the result tables in Appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation of April 2014' (iis-protocol, version 3.3). For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. 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. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.

In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test and by R(0.01) for the Rosner General ESD test (see appendix 6, no.16). Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test and by R(0.05). Both outliers and stragglers were not included in the calculations of the averages and the 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 analysis results are plotted. The corresponding laboratory numbers are under 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 standard. 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

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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 (see appendix 6; nos.14 and 15). Also a normal Gauss curve was projected over the Kernel Density Graph.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the spread of this interlaboratory study. The target standard deviation was calculated from the literature reproducibility by division with 2.8.

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 in accordance with:

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

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

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

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

4 EVALUATION

In this proficiency test problems were encountered with the despatch of the samples. Several laboratories in Nigeria, Qatar, Saudi Arabia and Tunesia received the samples late or not at all. For the ”main Jet Fuel A1” PT, 19 participants reported the results after the final reporting date and another 9 participants did not report any results at all.
For the PT “Particle Size”, 7 participants reported the results after the final reporting date and another 11 participants did not report any results at all.
Finally 100 participants of the main round and the 33 participants of the particle size round reported in total 1741 numerical results. Observed were 29 outlying results, which is 1.6%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per sample and per test. The methods, which are used by the various laboratories, are taken into account for explaining the observed differences where possible and applicable. These methods are also in the tables together with the reported data. The abbreviations, used in these tables, are listed in appendix 6.
In the iis PT reports, ASTM methods are referred to with a number (e.g. D2086) and an added designation for the year that the method was adopted or revised (e.g. D2086-08). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D2086-08 (2013)). In the results tables of Appendix 1 only the method number and year of adoption or revision will be used.

In this section, the results are discussed per test.
Since the checklist is continuously updated, the users are advised to monitor the updates. The latest version at the time of this Round Robin is “DEF STAN 91-91/Issue 7, dated: February 2011, Note Amendent 2 Implementation date December 2012” and ASTM D1655:13a. One must keep in mind that ISO-methods are not mentioned in the “Checklist”.
The majority of the data sets proved to have a normal distribution. However, a number of data sets were not Gaussian distributed and the distribution of a few data sets was suspect. The statistical evaluation for these latter data sets should be used with due care.

Aromatics by: FIA (D1319): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with ASTM D1319:13.

Aromatics by: HPLC (D6379) The %M/M determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with ASTM D6379:11.
The %V/V determination may be problematic. Regretfully, no precision data for the determination in %V/V is mentioned in ASTM D6379:11, but the observed reproducibility was larger than for the determination in %M/M.

Colour Saybolt: This determination was very problematic for the manual test method ASTM D156. No statistical outliers were observed. However, the calculated

reproducibility is not at all in agreement with the requirements of ASTM D156:12.
The determination was problematic for the automatic test method ASTM D156. One statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier is not in agreement with the requirements of ASTM D6045:12.

Density: This determination was problematic for a number of laboratories. Six statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D4052:11.

Distillation: This determination was not problematic. In total six statistical outliers were observed. The calculated reproducibilities for IBP, 10% rec, 50% rec and FBP, after rejection of the statistical outliers, are all in agreement with the requirements of ASTM D86:12. The calculated reproducibility for 90% rec is not in agreement with the requirements of ASTM D86:12.

Existent Gum: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in good agreement with ASTM D381:12. Seventeen participants reported to have used IP540, a method that is not equivalent to D381:12.

Flash Point: This determination was not problematic. Seven test results were excluded as the test methods were not equivalent to IP170:10. The calculated reproducibility, after rejection of the suspect data is in agreement with the requirements of IP170:10.
In the Joint Fuelling System Checklist both the IP170/ISO13736 and the ASTM D56 are mentioned as test methods. When the test results from IP170/ISO13736 and ASTM D56 were evaluated separately, then both calculated reproducibilities are in agreement with the respective reproducibility requirements.

Freezing Point: This determination was problematic for the automatic method. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D7153:05(2010)/IP529 and D5972/IP435.
This determination was not problematic for the manual method. One statistical outlier was observed. The calculated reproducibility is in agreement with the requirements of ASTM D2386:06(2012)/IP16:07.
Three participants that used ASTM D2386 reported the test results under ‘automated’ and one participant that used IP529 reported the test result under ‘manual’. These test results were placed in the correct column by iis.

JFTOT: The reported test results for tube rating vary over a range from <0 to <2. For the reported Delta P test results one statistical outlier was observed. Six laboratories reported a higher volume than the maximum allowed (450 ± 45 mL) may be pumped in a valid test, see ASTM D 3241:09-B table 2). It should be noted that a pumped volume higher than 495 mL or below 405 mL means that the test is not performed correctly and results obtained are suspect.

Mercaptan Sulphur: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D3227:10. One participant reported to have used UOP163, a method that is not equivalent to ASTM3227/IP342/ISO3012.

MSEP: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D3948:11.
All laboratories, except two, reported a test result above 90, what indicates little or no contamination by surfactants.

Naphthalenes: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier is in agreement with the requirements of ASTM D1840:07(2013)-B. When the results from procedures A and B are evaluated separately, the calculated reproducibility are respectively not in agreement with the requirements of ASTM D1840:10A but in agreement with the requirements of ASTM D1840:10B.

Smoke Point: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D1322:12e2.

Specific Energy: This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D3338:09.

Total Acidity: This determination was problematic at the low level 0.0018 mg/KOH/g. Three test results were excluded because the used test methods are not mentioned in the check list for JET-A1. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ASTM D3242:11.

Total Sulphur: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D5453:12.
When the XRF test results (D4294, D2622, ISO20884, ISO14596 ISO8750/IP336) and the UVF test results (D5453, ISO20846) are evaluated separately, than it can be observed that the spread for the various XRF test methods is larger than the spread of the used UVF test methods.

Viscosity: This determination was very problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the requirements of ASTM D445:12.

Particle Size: The determination of the particle size distribution is problematic since the first PT. This year the participating laboratories received a questionnaire in order to discover a cause in the reported differences between IP564 and IP565 for the observed problems. The received answers to the questionnaire are given in Appendix 4. It shows that all 19 participants that reported to have used IP564 used the Parkin Hannifin apparatus as expected. And all 14 participants that reported to have used IP565, used the Stanhope Seta AV apparatus.
The number of laboratories per group was sufficienctly large to allow a separate statistical evaluation for each of the test methods.
It is remarkable to see that the concensus values of the IP564 method are almost half of the concensus values of the IP565 method. The observed differences are statistically significant (in all cases $t_{calc}<t_{table}$, p=0.01).
The determination was very problematic for participants that used IP564 (Parkin Hannifin). In total five statistical outliers were observed. None of the reproducibilities is in agreement with the requirements of IP564:13.
The determination was also problematic for participants that used the IP565 (Stanhope Seta AV), but no statistical outliers were observed and the reproducibilities for >30µm and for >25 µm are almost in agreement with the requirements of IP565:13. However, the other reproducibilities are not in agreement with the requirements of IP565.
One participant reported to have used an in house test method. The test results obtained with this in house test method were evaluated under the IP565 test method because the test results had the best match with the IP565 test results. For the use of an in house method it is refered to the letter from the Energy Institute of 4 July 2008:
"*Parkin Hannifin and Stanhope Seta AV are the only manufacturers to date that have demonstrated to the Energy Institute compliance of their particle counters to IP564 and IP565 methods by the prevision of analytical data."*

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant standard and the reproducibility as found for the group of laboratories that participated.
The reproducibilities derived from literature standards (in casu ASTM standards) and the calculated reproducibilities of samples #14016 and #14017 are compared in the next tables.

Parameter	unit	n	Average	2.8 * sd	R (lit)
Aromatics by FIA	%V/V	56	15.73	2.33	2.62
Aromatics by HPLC	%M/M	18	18.93	2.47	1.98
Aromatics by HPLC	%V/V	17	16.92	4.02	unknown
Colour Saybolt (ASTM D156)		50	25.5	4.5	2.0
Colour Saybolt (ASTM D6045)		34	25.6	1.8	1.2
Density at 15°C	kg/m^3	91	797.95	0.24	0.50
Initial Boiling Point	°C	91	148.5	7.7	8.2
10% recovered	°C	89	169.6	3.3	3.7
50% recovered	°C	89	199.6	3.0	3.0
90% recovered	°C	90	244.2	4.7	3.7
Final Boiling Point	°C	90	273.4	5.2	7.1
Existent Gum	mg/100mL	46	0.72	0.95	3.14
Flash Point	°C	84	41.8	2.6	3.2
Freezing Point (Automatic)	°C	35	-53.4	1.3	0.9
Freezing Point (Manual)	°C	59	-53.3	2.5	2.5
Mercaptan Sulphur	%M/M	54	0.0005	0.0002	0.0003
MSEP	rating	70	96.3	5.9	6.6
Naphthalenes	%V/V	45	0.56	0.05	0.07
Smoke Point	mm	70	24.7	3.6	3.8
Specific Energy	MJ/kg	56	43.37	0.07	0.05
Total Acidity	mg KOH/g	59	0.0018	0.0033	0.0017
Total Sulphur	mg/kg	69	679.1	92.6	86.0
Viscosity @ -20°C	cSt	62	3.985	0.126	0.076

table 5: comparison of the observed and target reproducibilities of sample #14016

Parameter	unit	n	Average	2.8 * sd	R (lit)
Particle Size >4 µm (IP564)	mL^{-1}	18	9168	8940	1818
Particle Size >6 µm (IP564)	mL^{-1}	18	1700	2109	575.5
Particle Size >14 µm (IP564)	mL^{-1}	19	49.1	70.6	33.4
Particle Size >21 µm (IP564)	mL^{-1}	18	9.6	16.0	12.2
Particle Size >25 µm (IP564)	mL^{-1}	18	4.0	6.6	5.3
Particle Size >30 µm (IP564)	mL^{-1}	18	1.4	3.0	2.3
Particle Size >4 µm (IP565)	mL^{-1}	15	15341	5245	1727
Particle Size >6 µm (IP565)	mL^{-1}	15	3110	1495	719
Particle Size >14 µm (IP565)	mL^{-1}	15	123.8	108.4	74.8
Particle Size >21 µm (IP565)	mL^{-1}	15	27.5	30.9	23.7
Particle Size >25 µm (IP565)	mL^{-1}	15	12.6	16.1	13.3
Particle Size >30 µm (IP565)	mL^{-1}	15	5.1	7.7	7.1

table 6: comparison of the observed and target reproducibilities of sample #14017

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 standards. The tests that are problematic have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF MARCH 2014 WITH PREVIOUS PTS

	March 2014	March 2013	March 2012	March 2011
Number of reporting labs	100	92	91	126
Number of results reported	1741	1705	1704	1713
Statistical outliers	29	45	53	80
Percentage outliers	1.6%	2.6%	3.1%	4.7%

table 7: 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 standards. The conclusions are given the following table:

Parameter	March 2014	March 2013	March 2012	March 2011
Aromatics by FIA	+	++	++	++
Aromatics by HPLC	-	+/-	+/-	++
Colour Saybolt	--	--	--	--
Density at 15°C	++	++	++	++
Distillation	+	+	++	++
Existent Gum	++	++	++	++
Flash Point	+	+/-	+/-	++
Freezing Point	-	+	++	++
Mercaptan Sulphur	+	+/-	+/-	++
MSEP	+	--	+/-	-
Naphthalenes	+	-	+/-	--
Smoke Point	+/-	+	--	--
Specific Energy	-	++	-	++
Total Acidity	--	-	--	+/-
Total Sulphur	+/-	-	+/-	--
Viscosity @ -20°C	-	+	-	--
Particle Size Distribution	-	-	--	+/-

table 8: comparison determinations against the standard requirements

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

++: group performed much better than the standard
+ : group performed better than the standard
+/-: group performance equals the standard
- : group performed worse than the standard
-- : group performed much worse than the standard

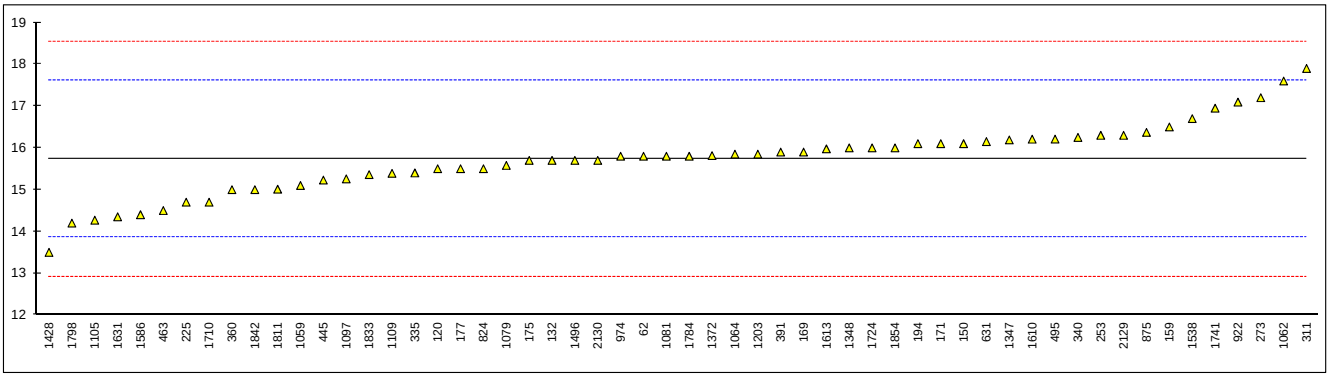
APPENDIX 1

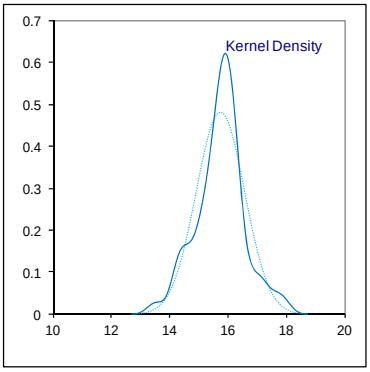
Determination of Aromatics by FIA on sample #14016; results in %V/V

lab	method	value	mark	z(targ)	remarks
62	D1319	15.8		0.07	
90		-----		-----	
120	D1319	15.5		-0.25	
132	D1319	15.7		-0.03	
150	D1319	16.1		0.39	
159	D1319	16.5		0.82	
169	D1319	15.9		0.18	
171	D1319	16.1		0.39	
175	D1319	15.7		-0.03	
177	D1319	15.5		-0.25	
194	D1319	16.1		0.39	
225	D1319	14.7		-1.10	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253	D1319	16.30		0.61	
258		-----		-----	
273	D1319	17.2		1.57	
311	D1319	17.9		2.32	
317		-----		-----	
335	D1319	15.4		-0.35	
336		-----		-----	
340	D1319	16.25		0.55	
353		-----		-----	
360	D1319	15.0		-0.78	
370		-----		-----	
391	D1319	15.9		0.18	
398		-----		-----	
399		-----		-----	
445	D1319	15.23		-0.54	
447		-----		-----	
463	D1319	14.5		-1.32	
473		-----		-----	
495	D1319	16.21		0.51	
594		-----		-----	
601		-----		-----	
604		-----		-----	
606		-----		-----	
631	D1319	16.15		0.45	
671		-----		-----	
824	D1319	15.5		-0.25	
875	D1319	16.37		0.68	
922	D1319	17.095		1.46	
962		-----		-----	
963		-----		-----	
974	D1319	15.8		0.07	
997		-----		-----	
1021		-----		-----	
1026		-----		-----	
1039		-----		-----	
1049		-----		-----	
1059	D1319	15.1		-0.67	
1062	D1319	17.6		2.00	
1064	D1319	15.85		0.13	
1079	D1319	15.58		-0.16	
1081	D1319	15.8		0.07	
1097	D1319	15.258		-0.51	
1105	D1319	14.27		-1.56	
1109	D1319	15.39		-0.36	
1126		-----		-----	
1146		-----		-----	
1150		-----		-----	
1161		-----		-----	
1167		-----		-----	
1201		-----		-----	
1203	D1319	15.85		0.13	
1237		-----		-----	
1284		-----		-----	
1299		-----		-----	
1318		-----		-----	
1347	D1319	16.19		0.49	
1348	D1319	16.0		0.29	

1372	D1319	15.814	0.09
1373		-----	-----
1423		-----	-----
1428	D1319	13.5	-2.38
1487		-----	-----
1496	D1319	15.7	-0.03
1531		-----	-----
1538	D1319	16.7	1.03
1586	D1319	14.4	-1.42
1587		-----	-----
1610	IP156	16.208	0.51
1613	D1319	15.975	0.26
1631	D1319	14.35	-1.48
1634		-----	-----
1678		-----	-----
1710	D1319	14.7	-1.10
1715		-----	-----
1720		-----	-----
1724	D1319	16.0	0.29
1730		-----	-----
1741	D1319	16.95	1.30
1755		-----	-----
1757		-----	-----
1770		-----	-----
1776		-----	-----
1784	D1319	15.8	0.07
1787		-----	-----
1792		-----	-----
1794		-----	-----
1798	D1319	14.2	-1.64
1811	D1319	15.01	-0.77
1833	D1319	15.36	-0.40
1842	IP156	15.0	-0.78
1854	D1319	16.0	0.29
1951		-----	-----
2129	D1319	16.3	0.61
2130	D1319	15.7	-0.03

normality	OK
n	56
outliers	0
mean (n)	15.731
st.dev. (n)	0.8310
R(calc.)	2.327
R(D1319:13)	2.622



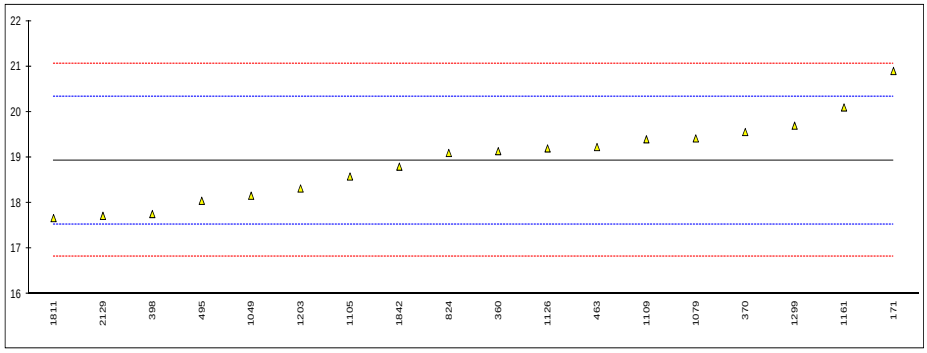


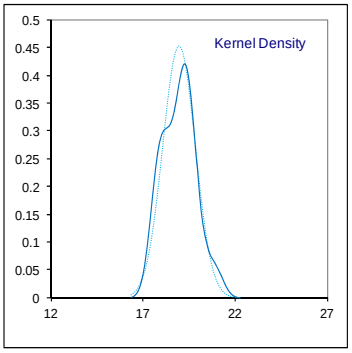
Determination of Aromatics by HPLC on sample #14016; results in %M/M & %V/V

lab	method	%M/M	mark	z(targ)	%V/V	mark	z(targ)	Remarks
62		-----		-----	-----		-----	
90		-----		-----	-----		-----	
120		-----		-----	-----		-----	
132		-----		-----	-----		-----	
150		-----		-----	-----		-----	
159		-----		-----	-----		-----	
169		-----		-----	-----		-----	
171	D6379	20.9		2.78	19.0		-----	
175		-----		-----	-----		-----	
177		-----		-----	-----		-----	
194		-----		-----	-----		-----	
225		-----		-----	-----		-----	
228		-----		-----	-----		-----	
237		-----		-----	-----		-----	
238		-----		-----	-----		-----	
253		-----		-----	-----		-----	
258		-----		-----	-----		-----	
273		-----		-----	-----		-----	
311		-----		-----	-----		-----	
317		-----		-----	-----		-----	
335		-----		-----	-----		-----	
336		-----		-----	-----		-----	
340		-----		-----	-----		-----	
353		-----		-----	-----		-----	
360	D6379	19.14		0.29	-----		-----	
370	D6379	19.56		0.89	17.79		-----	
391		-----		-----	-----		-----	
398	D6379	17.76		-1.66	16.54		-----	
399		-----		-----	-----		-----	
445		-----		-----	-----		-----	
447		-----		-----	-----		-----	
463	D6379	19.23		0.42	17.18		-----	
473		-----		-----	-----		-----	
495	D6379	18.05		-1.25	14.07		-----	
594		-----		-----	-----		-----	
601		-----		-----	-----		-----	
604		-----		-----	-----		-----	
606		-----		-----	-----		-----	
631		-----		-----	-----		-----	
671		-----		-----	-----		-----	
824	D6379	19.1		0.23	17.2		-----	
875		-----		-----	-----		-----	
922		-----		-----	-----		-----	
962		-----		-----	-----		-----	
963		-----		-----	-----		-----	
974		-----		-----	-----		-----	
997		-----		-----	-----		-----	
1021		-----		-----	-----		-----	
1026		-----		-----	16.7		-----	
1039		-----		-----	16.8		-----	
1049	D6379	18.162		-1.09	16.42925		-----	
1059		-----		-----	-----		-----	
1062		-----		-----	-----		-----	
1064		-----		-----	-----		-----	
1079	D6379	19.42		0.69	17.21		-----	
1081		-----		-----	-----		-----	
1097		-----		-----	-----		-----	
1105	D6379	18.584		-0.50	16.658		-----	
1109	D6591	19.40		0.66	-----		-----	
1126	D6379	19.2		0.38	24.1	G(0.01)	-----	
1146		-----		-----	-----		-----	
1150		-----		-----	-----		-----	
1161	EN12916	20.1		1.65	18.1		-----	
1167		-----		-----	-----		-----	
1201		-----		-----	-----		-----	
1203	EN12916	18.32		-0.87	-----		-----	
1237		-----		-----	-----		-----	
1284		-----		-----	-----		-----	
1299	IP436	19.7		1.08	17.3		-----	
1318		-----		-----	16.466		-----	
1347		-----		-----	-----		-----	
1348		-----		-----	-----		-----	
1372		-----		-----	-----		-----	
1373		-----		-----	-----		-----	

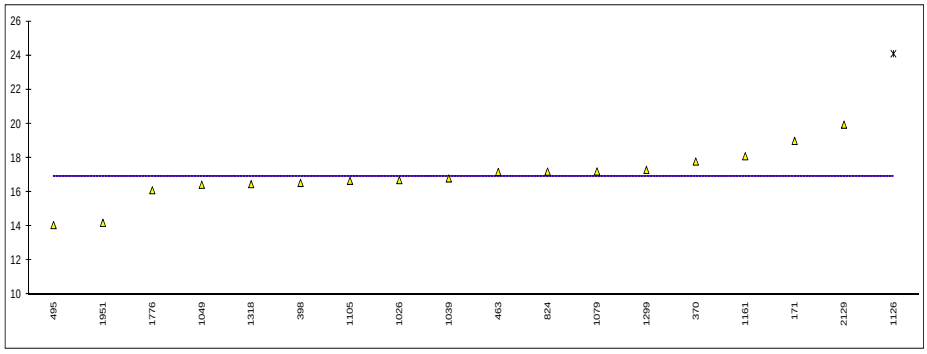
1423		-----	-----	-----	-----
1428		-----	-----	-----	-----
1487		-----	-----	-----	-----
1496		-----	-----	-----	-----
1531		-----	-----	-----	-----
1538		-----	-----	-----	-----
1586		-----	-----	-----	-----
1587		-----	-----	-----	-----
1610		-----	-----	-----	-----
1613		-----	-----	-----	-----
1631		-----	-----	-----	-----
1634		-----	-----	-----	-----
1678		-----	-----	-----	-----
1710		-----	-----	-----	-----
1715		-----	-----	-----	-----
1720		-----	-----	-----	-----
1724		-----	-----	-----	-----
1730		-----	-----	-----	-----
1741		-----	-----	-----	-----
1755		-----	-----	-----	-----
1757		-----	-----	-----	-----
1770		-----	-----	-----	-----
1776		-----	-----	16.11	-----
1784		-----	-----	-----	-----
1787		-----	-----	-----	-----
1792		-----	-----	-----	-----
1794		-----	-----	-----	-----
1798		-----	-----	-----	-----
1811	D6379	17.67	-1.79	-----	-----
1833		-----	-----	-----	-----
1842	IP436	18.8	-0.19	-----	-----
1854		-----	-----	-----	-----
1951		-----	-----	14.2	-----
2129	IP391	17.72	-1.72	19.95	-----
2130		-----	-----	-----	-----

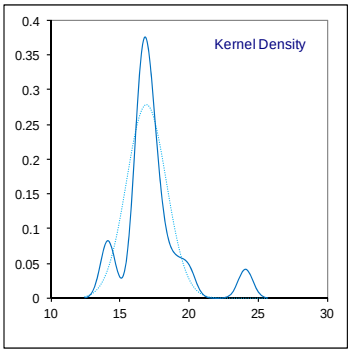
normality	OK	suspect
n	18	17
outliers	0	1
mean (n)	18.934	16.924
st.dev. (n)	0.8822	1.4346
R(calc.)	2.470	4.017
R(D6379:11)	1.977	unknown





Aromatics by HPLC in %M/M





Aromatics by HPLC in %V/V

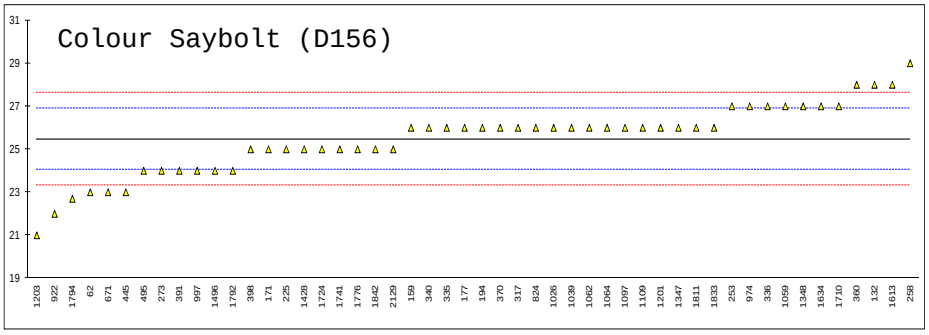
Determination of Colour Saybolt (D156 / D6045) on sample #14016;

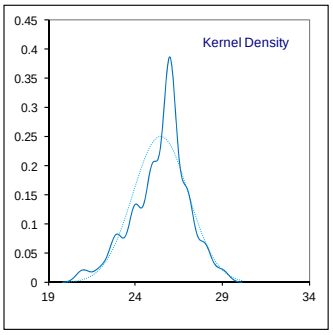
lab	method	D156	mark	z(targ)	method	D6045	mark	z(targ)	Remarks
62	D156-N	23		-3.46		-----		-----	
90		-----		-----		-----		-----	
120		-----		-----	D6045-N	26		0.94	
132	D156-N	28		3.54		-----		-----	
150		-----		-----	D6045-N	26		0.94	
159	D156-N	26		0.74		-----		-----	
169		-----		-----	D6045-N	25		-1.31	
171	D156-N	25		-0.66	D6045-N	25		-1.31	
175		-----		-----		-----		-----	
177	D156-	26		0.74		-----		-----	
194	D156-N	26		0.74		-----		-----	
225	D156-N	25		-0.66		-----		-----	
228		-----		-----		-----		-----	
237		-----		-----		-----		-----	
238		-----		-----		-----		-----	
253	D156-N	27		2.14		-----		-----	
258	D156-N	29		4.94		-----		-----	
273	D156-N	24		-2.06		-----		-----	
311		-----		-----	D6045-N	25		-1.31	
317	D156-N	26		0.74		-----		-----	
335	D156-N	26		0.74		-----		-----	
336	D156-N	27		2.14		-----		-----	
340	D156-N	26		0.74		-----		-----	
353		-----		-----	D6045-N	25		-1.31	
360	D156-N	28		3.54		-----		-----	
370	D156-N	26		0.74		-----		-----	
391	D156-N	24		-2.06		-----		-----	
398	D156-N	25		-0.66		-----		-----	
399		-----		-----		-----		-----	
445	D156-N	23		-3.46		-----		-----	
447		-----		-----		-----		-----	
463		-----		-----		-----		-----	
473		-----		-----	D6045-N	25		-1.31	
495	D156-Y	24		-2.06		-----		-----	
594		-----		-----		-----		-----	
601		-----		-----		-----		-----	
604		-----		-----		-----		-----	
606		-----		-----		-----		-----	
631		-----		-----	D6045-N	27		3.20	
671	D156-N	23		-3.46		-----		-----	
824	D156-N	26		0.74	D6045-N	26		0.94	
875		-----		-----	D6045-Y	26		0.94	
922	D156-N	22		-4.86		-----		-----	
962		-----		-----		-----		-----	
963		-----		-----		-----		-----	
974	D156-N	27		2.14		-----		-----	
997	D156-N	24		-2.06		-----		-----	
1021		-----		-----	D6045-N	25		-1.31	
1026	D156-Y	26		0.74		-----		-----	
1039	D156-N	26		0.74		-----		-----	
1049		-----		-----	D6045-N	26		0.94	
1059	D156-N	27		2.14		-----		-----	
1062	D156-Y	26		0.74		-----		-----	
1064	D156-N	26		0.74	D6045-N	27		3.20	
1079		-----		-----	D6045-N	25		-1.31	
1081		-----		-----	D6045-N	25		-1.31	
1097	INH-003-Y	26		0.74		-----		-----	
1105		-----		-----	D6045-N	25		-1.31	
1109	D156-N	26		0.74	D6045-N	26		0.94	
1126		-----		-----		-----		-----	
1146		-----		-----		-----		-----	
1150		-----		-----		-----		-----	
1161		-----		-----	D6045-Y	26		0.94	
1167		-----		-----	D6045-N	25		-1.31	
1201	D156-N	26		0.74	D6045-N	26		0.94	
1203	D156-N	21		-6.26		-----		-----	
1237		-----		-----		-----		-----	
1284		-----		-----		-----		-----	
1299		-----		-----	D6045-N	26		0.94	
1318		-----		-----	D6045-N	26		0.94	
1347	D156-N	26		0.74		-----		-----	
1348	D156-N	27		2.14		-----		-----	
1372		-----		-----	D6045-N	26		0.94	
1373		-----		-----		-----		-----	

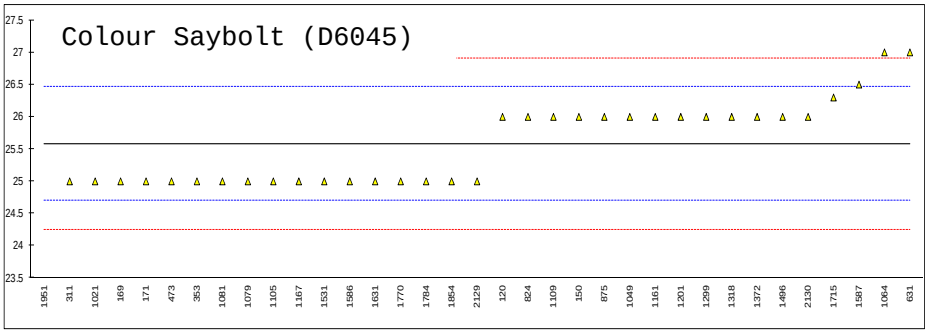
1423		-----	-----		-----		-----
1428	D156-N	25	-0.66		-----		-----
1487		-----	-----		-----		-----
1496	D156-N	24	-2.06	D6045-N	26		0.94
1531		-----	-----	D6045-N	25		-1.31
1538		-----	-----		-----		-----
1586		-----	-----	D6045-N	25		-1.31
1587		-----	-----	D6045-N	26.5		2.07
1610		-----	-----		-----		-----
1613	D156-N	28	3.54		-----		-----
1631		-----	-----	D6045-N	25		-1.31
1634	D156-N	27	2.14		-----		-----
1678		-----	-----		-----		-----
1710	D156-N	27	2.14		-----		-----
1715		-----	-----	D6045-N	26.3		1.62
1720		-----	-----		-----		-----
1724	D156-Y	25	-0.66		-----		-----
1730		-----	-----		-----		-----
1741	D156-Y	25	-0.66		-----		-----
1755		-----	-----		-----		-----
1757		-----	-----		-----		-----
1770		-----	-----	D6045-N	25		-1.31
1776	D156-N	25	-0.66		-----		-----
1784		-----	-----	D6045-N	25		-1.31
1787		-----	-----		-----		-----
1792	D156-N	24	-2.06		-----		-----
1794	D156-N	22.7	-3.88		-----		-----
1798		-----	-----		-----		-----
1811	D156-N	26.0	0.74		-----		-----
1833	D156-	26	0.74		-----		-----
1842	D156-N	25	-0.66		-----		-----
1854		-----	-----	D6045-N	25		-1.31
1951		-----	-----	D6045-N	20	R(0.01)	-12.61
2129	D156-N	25	-0.66	D6045-N	25		-1.31
2130		-----	-----	D6045-N	26		0.94

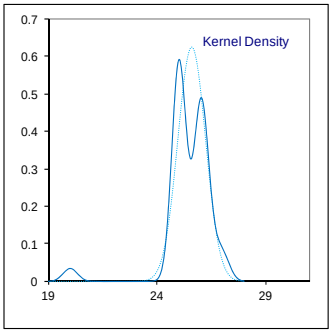
	normality	OK	normality	OK
	n	50	n	34
	outliers	0	outliers	1
	mean (n)	25.47	mean (n)	25.58
	st.dev. (n)	1.604	st.dev. (n)	0.637
	R(calc.)	4.49	R(calc.)	1.78
	R(D156:12)	2.00	R(D6045:12)	1.24

N: sample not filtered before measurement
Y: sample filtered before measurement







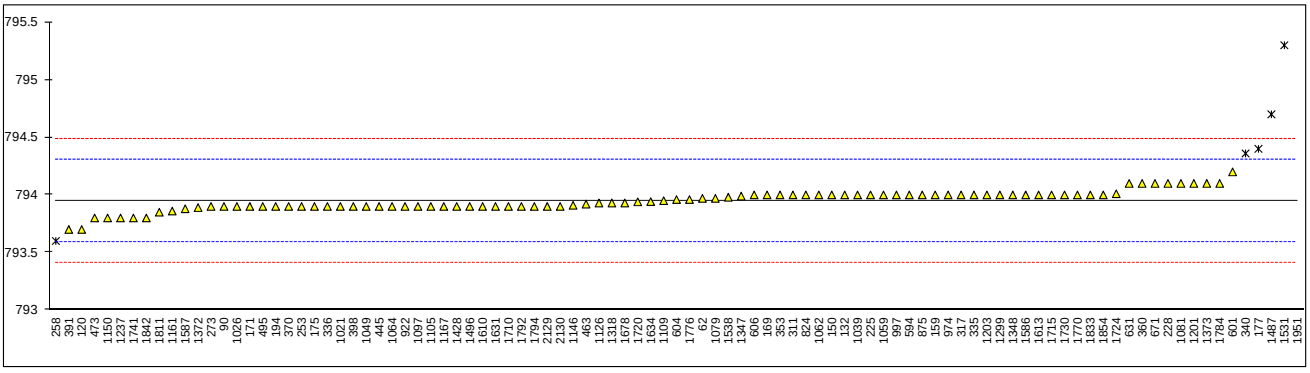


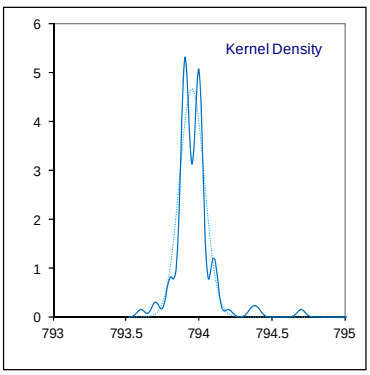
Determination of Density @15°C on sample #14016; results in kg/m^3

lab	method	value	mark	z(targ)	remarks
62	D4052	793.97		0.12	
90	D4052	793.9		-0.28	
120	D4052	793.7		-1.40	
132	D4052	794.0		0.28	
150	D4052	794.0		0.28	
159	D4052	794.0		0.28	
169	D4052	794.0		0.28	
171	D4052	793.9		-0.28	
175	D4052	793.9		-0.28	
177	D4052	794.4	C,R(0.01)	2.52	first reported: 793.6
194	D4052	793.9		-0.28	
225	D4052	794.0		0.28	
228	D4052	794.1		0.84	
237		-----		-----	
238		-----		-----	
253	D4052	793.9		-0.28	
258	D1298	793.6	R(0.01)	-1.96	
273	D4052	793.9		-0.28	
311	D4052	794.0		0.28	
317	D4052	794.0		0.28	
335	D4052	794.0		0.28	
336	D4052	793.9		-0.28	
340	D4052	794.36	R(0.01)	2.30	
353	IP365	794.0		0.28	
360	D4052	794.1		0.84	
370	D4052	793.9		-0.28	
391	D4052	793.7		-1.40	
398	D4052	793.9		-0.28	
399		-----		-----	
445	D4052	793.9		-0.28	
447		-----		-----	
463	D4052	793.92		-0.16	
473	D4052	793.8		-0.84	
495	D4052	793.9		-0.28	
594	INH-3900	794.0		0.28	
601	D4052	794.2		1.40	
604	D4052	793.96		0.06	
606	D4052	794.0		0.28	
631	D4052	794.1		0.84	
671	D4052	794.1		0.84	
824	ISO12185	794.0		0.28	
875	D4052	794.0		0.28	
922	D4052	793.9		-0.28	
962		-----		-----	
963		-----		-----	
974	D4052	794.0		0.28	
997	D4052	794.0		0.28	
1021	D4052	793.90		-0.28	
1026	D4052	793.9		-0.28	
1039	D4052	794.0		0.28	
1049	D4052	793.90		-0.28	
1059	D4052	794.0		0.28	
1062	D4052	794.0		0.28	
1064	D4052	793.9		-0.28	
1079	D4052	793.97		0.12	
1081	D4052	794.1		0.84	
1097	ISO12185	793.9		-0.28	
1105	D4052	793.9		-0.28	
1109	D4052	793.95		0.00	
1126	ISO12185	793.93		-0.11	
1146	D4052	793.91		-0.22	
1150	ISO12185	793.8		-0.84	
1161	ISO12185	793.86		-0.50	
1167	ISO12185	793.9		-0.28	
1201	D4052	794.1		0.84	
1203	D4052	794.0	C	0.28	first reported: 790.0
1237	D4052	793.8		-0.84	
1284		-----		-----	
1299	D4052	794.0		0.28	
1318	D4052	793.93		-0.11	
1347	D4052	793.99		0.23	
1348	D4052	794.0		0.28	
1372	D4052	793.89		-0.33	
1373	INH-94	794.1		0.84	

1423		-----		-----
1428	D4052	793.9		-0.28
1487	D4052	794.7	R(0.01)	4.20
1496	D1298	793.9		-0.28
1531	D4052	795.3	R(0.01)	7.56
1538	D4052	793.98		0.17
1586	D4052	794.0		0.28
1587	D4052	793.88		-0.39
1610	IP365	793.9		-0.28
1613	D4052	794.0		0.28
1631	D4052	793.9		-0.28
1634	D4052	793.942		-0.04
1678	ISO12185	793.93		-0.11
1710	D4052	793.9		-0.28
1715	ISO12185	794.0		0.28
1720	D4052	793.94		-0.05
1724	D4052	794.01		0.34
1730	D4052	794.0		0.28
1741	D4052	793.8		-0.84
1755		-----		-----
1757		-----		-----
1770	D4052	794.0		0.28
1776	D4052	793.96		0.06
1784	D4052	794.1		0.84
1787		-----		-----
1792	D4052	793.9		-0.28
1794	ISO12185	793.9		-0.28
1798		-----		-----
1811	D4052	793.85		-0.56
1833	D4052	794.0		0.28
1842	D4052	793.8		-0.84
1854	D4052	794.0		0.28
1951	D4052	797.5	R(0.01)	19.88
2129	D4052	793.9		-0.28
2130	D4052	793.9		-0.28

normality	suspect
n	91
outliers	6
mean (n)	793.95
st.dev. (n)	0.085
R(calc.)	0.24
R(D4052:11)	0.50





Determination of Distillation ASTM D86 on sample #14016; results in °C

lab	method	IBP	mark	10%	mark	50%	mark	90%	mark	FBP	mark	res.		Loss
62	D86-A	151.7		171.9		200.8		245.2		275.7		1.0		0.6
90		-----		-----		-----		-----		-----		-----		-----
120	D86-A	146.3		168.5		199.4		243.2		271.3		1.0		1.0
132	D86-A	150.8		170.0		200.4		245.2		274.3		1.4		0.8
150	D86-A	148.5		169.4		199.1		244.3		270.9		1.1		1.6
159	D86-A	149.6		170.2		200.3		244.4		272.2		1.3		0.6
169	D86-A	146.0		169.0		199.5		243.8		273.3		1.3		0.6
171	D86-A	147.5		169.8		200.9		247.0		273.3		1.4		1.4
175	D86-A	149.6		169.8		199.3		245.4		272.1		1.2		1.3
177	D86	146.7		169.0		198.9		241.3		270.4		1.2		0.3
194	D86-A	145.8		170.2		199.7		244.1		275.1		1.5		0.1
225	D86-M	151.0		170.0		199.0		242.0		271.0		1.0		1.0
228	D86-M	144.0		165.0	R(0.05)	195.0	R(0.05)	240.0		270.0		1.0		-----
237		-----		-----		-----		-----		-----		-----		-----
238		-----		-----		-----		-----		-----		-----		-----
253	D86-M	148.0		169.0		198.0		242.0		272.0		0.9		0.9
258	D86-A	152.9		170.9		200.8		245.2		274.3		1.2		0.1
273	D86-A	151.6		170.4		200.1		244.5		273.5		1.2		0.5
311	D86-A	150.9		170.0		200.2		244.7		274.1		1.2		<0.1
317	D86-A	150.6		170.4		200.2		244.3		276.6		1.3		0.3
335	D86-A	150.2		169.0		200.2		245.5		273.2		1.3		0.4
336		-----		-----		-----		-----		-----		-----		-----
340	D86-A	150.7		170.5		201.1		246.4		274.2		1.4		1.2
353	IP123-A	145.5		169.6		199.8		244.4		276.2		1.1		0.1
360	D86-A	147.5		170.6		199.2		242.9		273.2		1.2		0.2
370	D86-A	149.5		169.8		200.7		245.6		273.5		1.5		0.3
391		-----		-----		-----		-----		-----		-----		-----
398	D86-A	152.0		169.3		198.9		244.6		274.3		0.9	C	0.9
399		-----		-----		-----		-----		-----		-----		-----
445	IP123-A	145.3		169.4		199.7		244.8		272.5		1.5		0.5
447		-----		-----		-----		-----		-----		-----		-----
463	D86-A	148.2		169.8		199.7		244.9		274.7		1.3		0.7
473	D86-A	148.2		170.0		199.9		244.5		274.0		1.2		0.7
495	D86-A	150.1		168.3		198.4		243.4		272.6		1.2		1.0
594	INH-2177-A	152.8		167.8		201.0		246.4		276.3		1.1		0.8
601		-----		-----		-----		-----		-----		-----		-----
604	D86-A	152.0		170.1		199.3		245.0		271.7		1.2		1.4
606	D86-A	150.2		170.9		201.1		244.1		275.2		1.2		0.5
631	D86-M	148.5		166.0		197.0		243.0		271.0		1.1		0.9
671		-----		-----		-----		-----		-----		-----		-----
824	D86-A	149.7		170.9		200.5		245.8		274.1		1.0		1.0
875	D86-A	146.3		169.7		200.0		245.1		273.7		1.2		1.1
922	D86-M	145.22		167.10		196.11		240.12		273.13		1.2		0.3
962		-----		-----		-----		-----		-----		-----		-----
963		-----		-----		-----		-----		-----		-----		-----
974	D86-A	149.1		168.9		198.9		244.6		271.0		1.2		1.5
997	D86-M	149.5		167.0		199.0		243.5		273.5		1.1		0.1
1021	D86-A	148.6		169.4		201.3		246.8		275.8		1.3		*2.1*
1026	ISO3405-A	149.5		169.8		199.5		243.0		274.6		1.2		0.1
1039	ISO3405-A	149.9		170.6		199.7		244.4		273.2		1.3		0.8
1049	D86-A	147.2		170.2		199.9		244.8		275.7		1.2		0.7
1059	ISO3405-A	146.7		168.8		199.3		242.7		272.2		1.4		0.6
1062	D86-A	149.4		169.8		199.8		243.3		273.6		1.2		0.3
1064	D86-A	150.6		169.8		200.6		246.6		276.6		1.1		0.7
1079	D86-A	150.4		170.4		200.8		245.8		275.4		1.2		0.7
1081	D86-A	144.6		169.8		199.3		241.4		271.4		1.0		-----
1097	ISO3405-A	150.0		170.0		200.9		246.2		274.6		1.3		0.8
1105	D86-A	146.6		169.4		199.1		243.3		273.3		1.2		0.3
1109	D86-A	147.2		169.7		199.4		244.6		271.6		1.3		0.8
1126	in house-M	148.9		169.8		201.9		244.2		275.3		-----		-----
1146	D86-A	148.1		169.0		198.9		241.7		271.6		1.3		<0.1
1150	ISO3405-A	153.0		167.9		197.8		241.4		274.4		1.0		1.0
1161	ISO3405-A	143.8		167.6		199.7		244.1		273.1		1.1		0.6
1167	ISO3405-A	145.0		166.8	C	199.1		243.2		273.1		1.3		0.7
1201	D86-A	147.4		168.1		198.7		244.4		271.7		1.0		1.3
1203	ISO3405-A	148.2		170.8		201.1		245.9		274.2		1.0		0.6
1237		-----		-----		-----		-----		-----		-----		-----
1284		-----		-----		-----		-----		-----		-----		-----
1299	D86-A	148.4		170.0		200.0		246.3		275.7		1.4		0.7
1318	D86-A	146.6		170.1		199.2		244.7		272.8		1.2		0.6
1347	D86-M	153		170		201		245		277		1.6		0.4
1348	D86-A	149.3		167.9		197.8		244.5		272.5		1.3		0.7
1372	D86-A	145.4		170.9		199.7		246.0		272.5		1.2		1.4
1373	D86-M	144.46		167.95		199.60		244.40		270.13		1.9		0.1

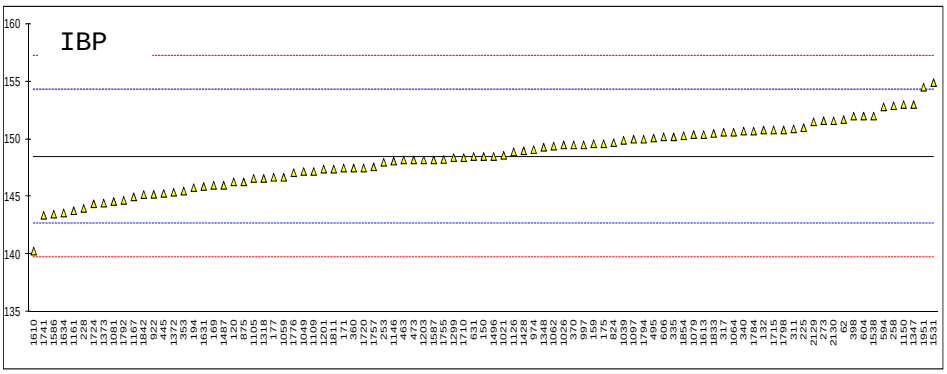
1423		-----	-----		-----		-----		-----	-----	-----
1428	D86-A	149.0	170.0		199.2		242.7		273.0	1.4	0.5
1487	D86	146.0	165.0	R(0.05)	195.4	R(0.05)	241.9		270.0	1.0	1.0
1496	D86-A	148.5	170.3		199.7		244.6		273.7	1.2	0.6
1531	D86-A	154.9	172.1		201.6		246.1		277.0	1.5	0.6
1538	D86-A	152.0	169.8		199.4		241.1		271.2	-----	-----
1586	D86-A	143.5	168.7		197.7		242.5		271.8	1.4	0.6
1587	D86-A	148.2	170.1		200.1		243.3		272.1	1.2	0.1
1610	IP123-M	140.3	166.9		197.7		241.9		268.3	1.2	0.9
1613	D86-A	150.4	173.0		200.8		243.4		274.4	1.2	0.4
1631	D86-A	145.9	169.1		199.8		243.3		275.1	1.3	0.6
1634	D86-A	143.6	170.7		199.9		244.6		274.5	1.2	0.5
1678		-----	-----		-----		-----		-----	-----	-----
1710	D86-A	148.4	170.4		200.7		246.5		275.2	1.2	0.9
1715	D86-A	150.8	170.0		199.6		244.5		273.8	1.4	0.4
1720	D86-A	147.5	170.1		199.9		244.0		275.4	1.2	0.2
1724	D86-A	144.4	169.5		199.8		244.2		275.4	1.3	0.7
1730		-----	-----		-----		-----		-----	-----	-----
1741	D86-A	143.40	169.22		199.10		241.12		272.90	1.20	0.80
1755	D86-A	148.24	170.18		200.68		248.0		274.46	1.38	0.84
1757	D86-A	147.6	169.5		198.8		245.3		270.2	1.4	0.7
1770		-----	-----		-----		-----		-----	-----	-----
1776	D86-A	147.1	169.3		199.8		245.7		273.6	1.2	1.3
1784	D86-A	150.7	169.5		198.6		244.5		271.1	1.3	1.5
1787		-----	-----		-----		-----		-----	-----	-----
1792	D86-A	144.7	170.4		200.5		244.6		273.8	1.2	0.6
1794	ISO3405-A	150.0	168.6		198.2		242.8		270.2	1.0	0.9
1798	D86-A	150.8	171.4		200.0		245.6		275.0	1.4	0.9
1811	D86-A	147.4	168.2		198.8		242.0		273.3	1.2	0.2
1833	D86-A	150.5	170.1		200.0		243.3		275.6	1.2	0.3
1842	D86-A	145.2	169.5		199.8		244.9		275.5	1.2	0.4
1854	D86-A	150.3	169.5		198.3		243.7		271.3	1.5	1.5
1951	D86-A	154.5	170.8		196.3		236	R(0.01)	264.8	R(0.01)	1.2	0.0
2129	D86-A	151.5	170.8		199.6		243.5		275.4	1.2	0
2130	D86-A	151.6	171.1		200.5		249.0		276.1	1.0	0.4

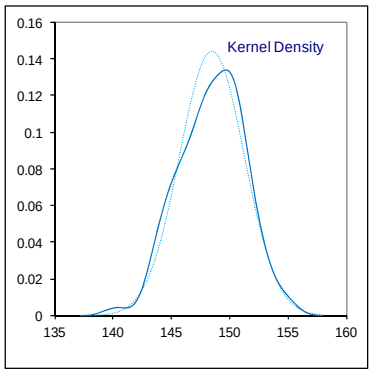
	normality	OK	suspect	suspect	OK	OK
	n	91	89	89	90	90
	outliers	0	2	2	1	1
	mean (n)	148.47	169.62	199.62	244.21	273.44
	st.dev. (n)	2.764	1.174	1.076	1.666	1.875
	R(calc.)	7.74	3.29	3.01	4.66	5.25
	R(D86:12)	8.17	3.73	2.97	3.66	7.10

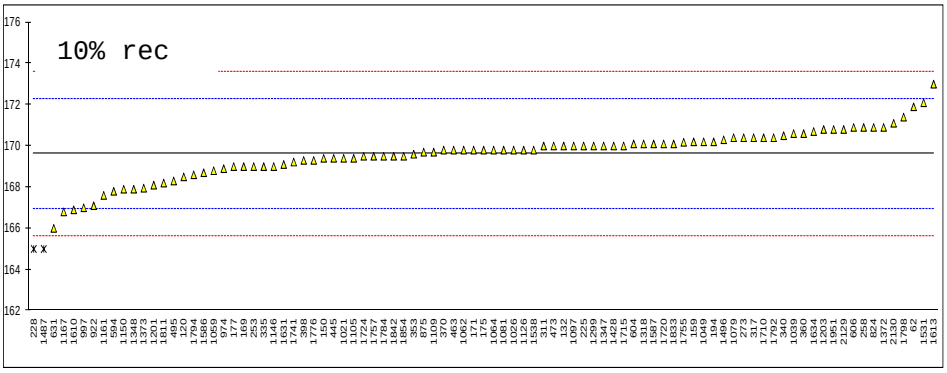
first reported result lab 1167: 164.61

first reported result lab 398: 0.7

Italic and underlined result: false positive result for lab 1021


IBP


Kernel Density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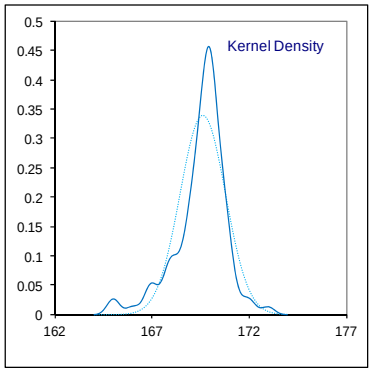
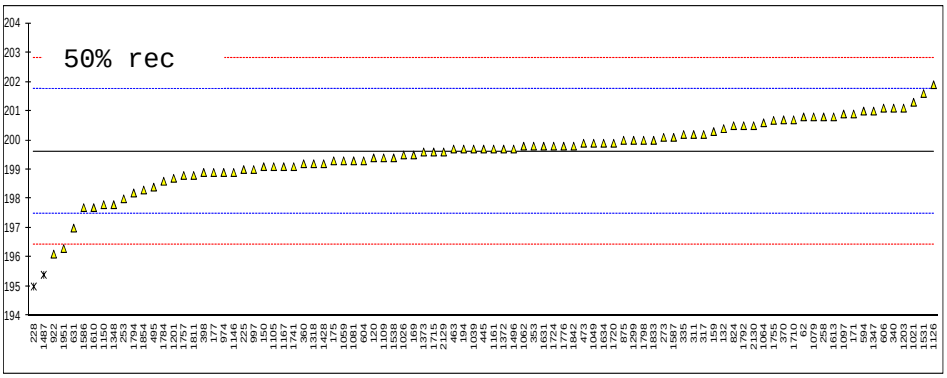
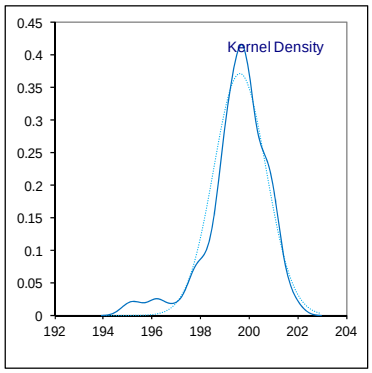
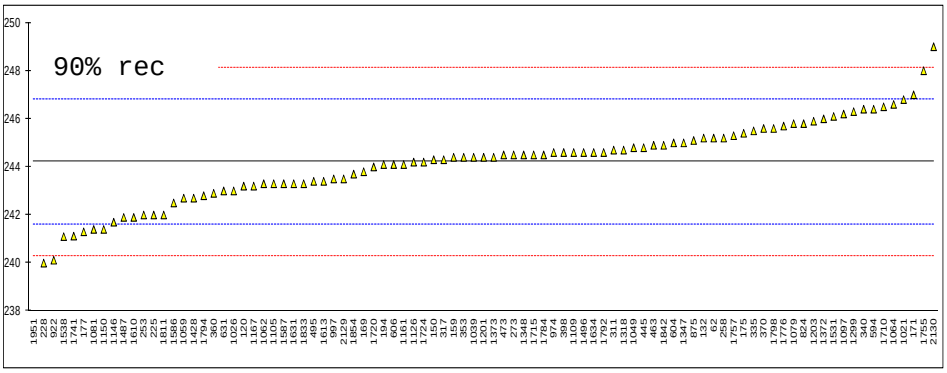

Kernel Density


50% rec


Kernel Density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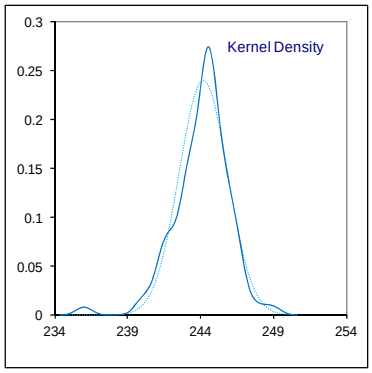
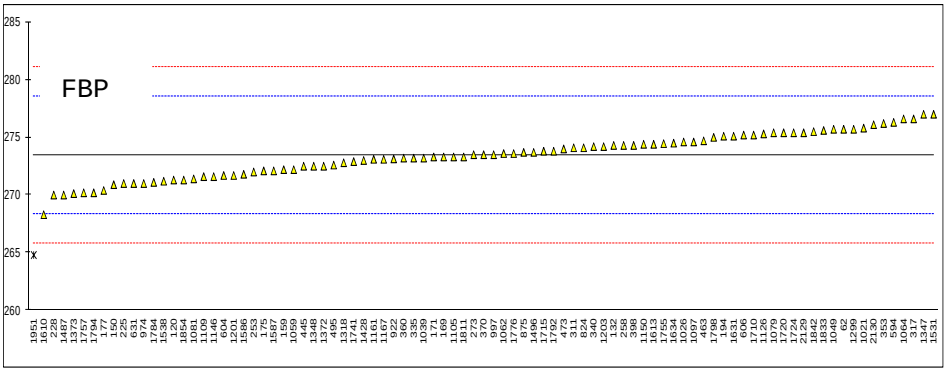
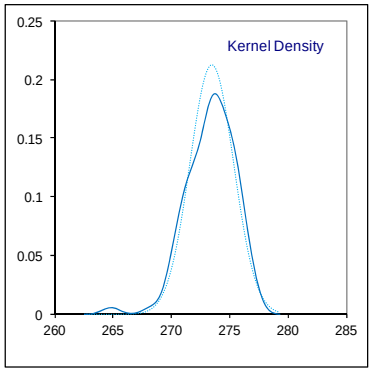

Kernel Density


FBP


Kernel Density

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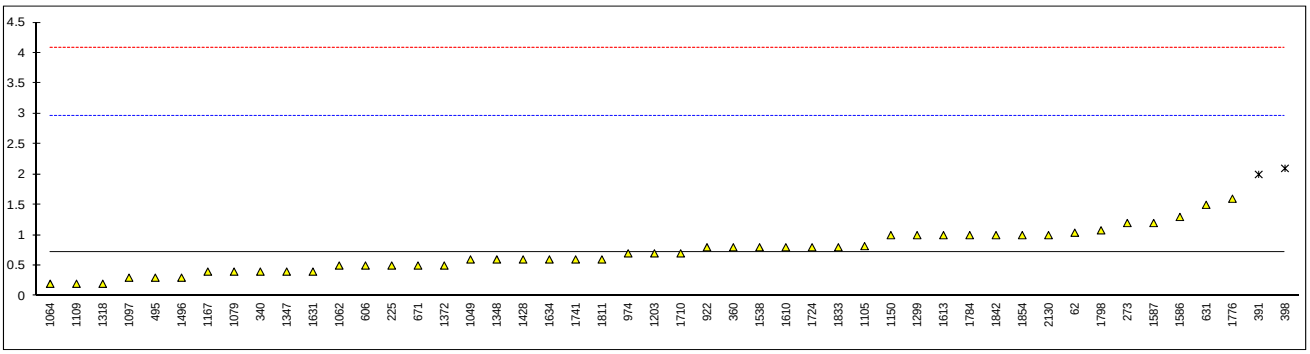
Determination of Existent Gum on sample #14016; results in mg/100 mL

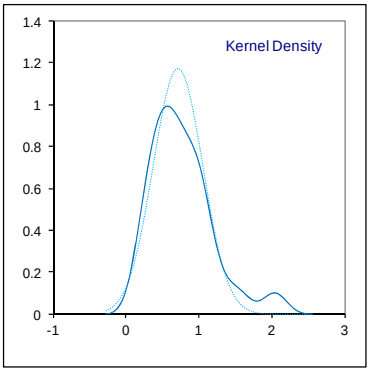
lab	method	value	mark	z(targ)	remarks
62	D381	1.04		0.28	
90		-----		-----	
120		-----		-----	
132	D381	<1		-----	
150	D381	<1		-----	
159		-----		-----	
169	D381	<0.5		-----	
171	D381	<1		-----	
175	D381	<0.5		-----	
177	D381	<1		-----	
194	D381	<1		-----	
225	IP540	0.5		-0.20	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253	D381	<1.0		-----	
258	D381	<1.0		-----	
273	D381	1.2		0.43	
311	D381	<1		-----	
317	D381	<1		-----	
335	D381	<1		-----	
336		-----		-----	
340	D381	0.4		-0.29	
353	IP540	<1		-----	
360	D381	0.8		0.07	
370	D381	<1		-----	
391	D381	2	R(0.05)	1.14	
398	D381	2.1	R(0.05)	1.23	
399		-----		-----	
445	IP540	<1		-----	
447		-----		-----	
463	D381	<0.5		-----	
473	IP540	<0.01		-----	
495	D381	0.3		-0.38	
594	INH-1567	<1		-----	
601		-----		-----	
604		-----		-----	
606	IP540	0.5		-0.20	
631	IP540	1.5	C	0.69	first reported: 2.5
671	D381	0.5		-0.20	
824		-----		-----	
875		-----		-----	
922	D381	0.8		0.07	
962		-----		-----	
963		-----		-----	
974	D381	0.7		-0.02	
997		-----		-----	
1021		-----		-----	
1026	ISO6246	<0.1		-----	
1039	IP540	<1		-----	
1049	D381	0.6		-0.11	
1059	D381Mod.	<1		-----	
1062	D381	0.5		-0.20	
1064	D381	0.2		-0.47	
1079	D381	0.4		-0.29	
1081	IP540	<1		-----	
1097	IP540	0.3		-0.38	
1105	D381	0.82		0.09	
1109	IP540	0.2		-0.47	
1126		-----		-----	
1146		-----		-----	
1150	ISO6246	1.0		0.25	
1161		-----		-----	
1167	ISO6246	0.4	C	-0.29	first reported: 0.5
1201	D381	<0.5		-----	
1203	D381	0.7		-0.02	
1237		-----		-----	
1284		-----		-----	
1299	D381	1		0.25	
1318	D381	0.2		-0.47	
1347	D381	0.4		-0.29	
1348	D381	0.6		-0.11	
1372	D381	0.5		-0.20	
1373		-----		-----	

1423		-----		-----	
1428	D381	0.6		-0.11	
1487		-----		-----	
1496	D381	0.3		-0.38	
1531		-----		-----	
1538	D381	0.8		0.07	
1586	D381	1.3		0.51	
1587	IP540	1.2		0.43	
1610	IP540	0.8		0.07	
1613	D381	1.0		0.25	
1631	IP540	0.4		-0.29	
1634	D381	0.6		-0.11	
1678		-----		-----	
1710	IP540	0.7		-0.02	
1715		-----		-----	
1720		-----		-----	
1724	IP540	0.8		0.07	
1730		-----		-----	
1741	D381	0.6		-0.11	
1755		-----		-----	
1757		-----		-----	
1770		-----		-----	
1776	D381	1.6		0.78	
1784	D381	1.0		0.25	
1787		-----		-----	
1792		-----		-----	
1794		-----		-----	
1798	D381	1.08		0.32	
1811	D381	0.6	C	-0.11	first reported: 3.40
1833	IP540	0.8		0.07	
1842	IP540	1.0		0.25	
1854	D381	1.0		0.25	
1951	D381	<1		-----	
2129	D381	<1		-----	
2130	D381	1		0.25	

	normality	OK
	n	46
	outliers	2
	mean (n)	0.723
	st.dev. (n)	0.3396
	R(calc.)	0.951
	R(D381:12)	3.143

Compare R(IP540) = 2.059





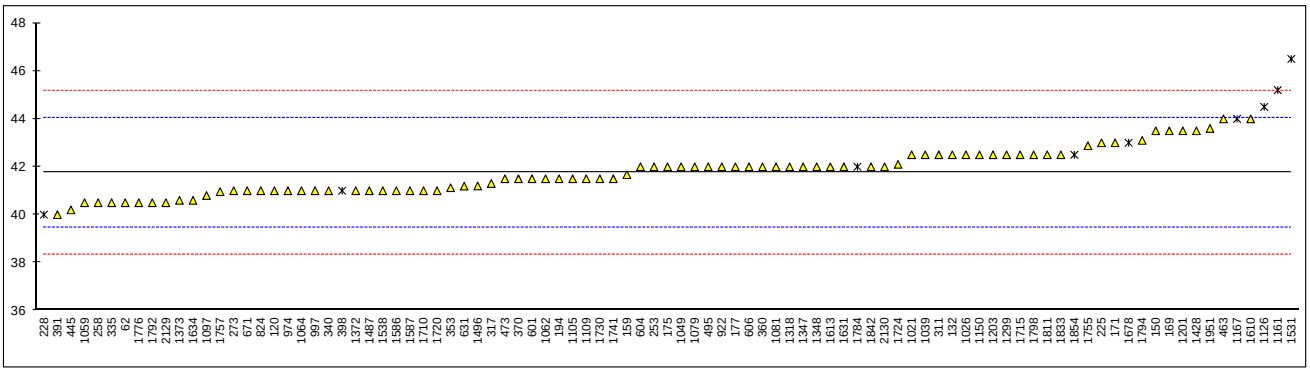
Determination of Flash Point on sample #14016; results in °C

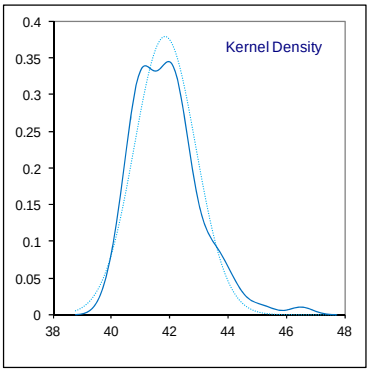
lab	method	value	mark	z(targ)	Remarks
62	D56-MF	40.5		-1.10	
90		-----		-----	
120	D56-E	41.0		-0.66	
132	D56-AE	42.5		0.65	
150	IP170-A	43.5		1.53	
159	D56-AE	41.67		-0.07	
169	D56-F	43.5		1.53	
171	D56-AE	43.0		1.09	
175	D56-MF	42		0.22	
177	IP170-F	42.0		0.22	
194	D56-AF	41.5		-0.22	
225	IP170-MF	43.0		1.09	
228	IP523-MF	40.0	ex	-1.53	result excluded, method not equivalent
237		-----		-----	
238		-----		-----	
253	IP170-MF	42.0		0.22	
258	IP170	40.5		-1.10	
273	IP170-AE	41.0		-0.66	
311	IP170-E	42.5		0.65	
317	IP170-AE	41.3		-0.40	
335	IP170-AF	40.5		-1.10	
336		-----		-----	
340	IP170-AF	41.0		-0.66	
353	IP170	41.125		-0.55	
360	D56-AE	42.0		0.22	
370	IP170-MF	41.5		-0.22	
391	IP170-F	40.0		-1.53	
398	D3828-MF	41.0	ex	-0.66	result excluded, method not equivalent
399		-----		-----	
445	IP170-MF	40.2		-1.36	
447		-----		-----	
463	IP170-E	44.0		1.97	
473	IP170-E	41.5		-0.22	
495	ISO13736-AE	42.0		0.22	
594		-----		-----	
601	IP170-MF	41.5		-0.22	
604	IP170-AE	42.0		0.22	
606	IP170-AE	42.0		0.22	
631	D56-MF	41.19		-0.49	
671	IP170-AE	41		-0.66	
824	IP170-E	41.0		-0.66	
875		-----		-----	
922	IP170-AE	42.0		0.22	
962		-----		-----	
963		-----		-----	
974	IP170-F	41.0		-0.66	
997	IP170-MF	41.0		-0.66	
1021	D56-AE	42.5		0.65	
1026	IP170	42.5		0.65	
1039	IP170-AE	42.5		0.65	
1049	IP170	42.0		0.22	
1059	IP170-AF	40.5		-1.10	
1062	IP170-AE	41.5		-0.22	
1064	IP170-AE	41.0		-0.66	
1079	IP170-AE	42.0		0.22	
1081	IP170	42.0		0.22	
1097	ISO13736-AF	40.8		-0.83	
1105	IP170-F	41.5		-0.22	
1109	IP170-AF	41.5		-0.22	
1126	ISO2719-E	44.5	ex	2.40	result excluded, method not equivalent
1146		-----		-----	
1150	D56-MF	42.5		0.65	
1161	ISO2719-AE	45.2	ex	3.02	result excluded, method not equivalent
1167	ISO2719-AE	44.0	ex	1.97	result excluded, method not equivalent
1201	IP170-AE	43.5		1.53	
1203	IP170-E	42.5		0.65	
1237		-----		-----	
1284		-----		-----	
1299	IP170-AF	42.5		0.65	
1318	IP170-E	42.0		0.22	
1347	IP170-MF	42.0		0.22	
1348	IP170-MF	42.0		0.22	
1372	IP170-AE	41.0		-0.66	
1373	IP170-MF	40.60		-1.01	

1423		-----		-----	
1428	IP170-AF	43.5		1.53	
1487	IP170	41.0		-0.66	
1496	IP170-F	41.2		-0.48	
1531	D93-AF	46.5	ex	4.15	result excluded, method not equivalent
1538	D56-AE	41.0		-0.66	
1586	IP170-MF	41.0		-0.66	
1587	IP170-AE	41.0		-0.66	
1610	IP170-AE	44.0		1.97	
1613	D56-AE	42.0		0.22	
1631	IP170-E	42.0		0.22	
1634	IP170-AE	40.6		-1.01	
1678	D7094-E	43.0	ex	1.09	result excluded, method not equivalent
1710	D56-AF	41.0		-0.66	
1715	D56-AE	42.5		0.65	
1720	D3828-F	41.0		-0.66	
1724	IP170-F	42.1		0.30	
1730	D56-AF	41.5		-0.22	
1741	IP170-AE	41.5		-0.22	
1755	D56-AE	42.88		0.99	
1757	D56-F	40.96		-0.69	
1770		-----		-----	
1776	IP170-E	40.5		-1.10	
1784	ISO2719-E	42.0	ex	0.22	result excluded, method not equivalent
1787		-----		-----	
1792	IP170-MF	40.5		-1.10	
1794	IP170-MF	43.1		1.18	
1798	IP170-AE	42.5		0.65	
1811	IP170-F	42.5		0.65	
1833	IP170-E	42.5		0.65	
1842	IP170-AE	42.0		0.22	
1854	ISO2719-E	42.5	ex	0.65	result excluded, method not equivalent
1951	IP170	43.6		1.62	
2129	IP170-AF	40.5		-1.10	
2130	IP170-AE	42.0		0.22	

			Only IP170/ISO13736	Only D56
	normality	OK	OK	OK
	n	84	64	19
	outliers	0 + 9 excl	0	0
	mean (n)	41.754	41.729	41.879
	st.dev. (n)	0.9236	0.9558	0.8281
	R(calc.)	2.586	2.676	2.319
	R(IP170:10)	3.200	3.200	4.300

M = Manual; A = Automated; F = Flame; E = Electric





Determination of Freezing Point (D7153 / D2386) on sample #14016; results in °C

lab	method	D7153-A	mark	z(targ)	method	D2386-M	mark	z(targ)	Remarks
62	D5972	-53.5		-0.45		-----		-----	
90		-----		-----		-----		-----	
120	D7153	-53.7		-1.07		-----		-----	
132		-----		-----	D2386	-54.5		-1.37	
150		-----		-----	D2386	-52.5	C	0.87	first reported: -56
159		-----		-----	D2386	-54.61	C	-1.49	was reported under automated
169		-----		-----	D2386	-53.5		-0.25	
171	D7153	-54.1		-2.32	D2386	-54.0		-0.81	
175		-----		-----	D2386	-53.5		-0.25	
177		-----		-----	D2386	-54.0		-0.81	
194		-----		-----	D2386	-52.5		0.87	
225		-----		-----	D2386	-54.0		-0.81	
228		-----		-----		-----		-----	
237		-----		-----		-----		-----	
238		-----		-----		-----		-----	
253		-----		-----	D2386	-53.0		0.31	
258		-----		-----	D2386	-53.0		0.31	
273		-----		-----	D2386	-52.5		0.87	
311		-----		-----	D2386	-54.0		-0.81	
317	D5972	-53.9		-1.69		-----		-----	
335	D7153	-53.2		0.48		-----		-----	
336		-----		-----		-----		-----	
340	D7153	-53.1		0.79		-----		-----	
353		-----		-----	IP16	-53.09	C	0.21	was reported under automated
360	D7153	-53.3		0.17		-----		-----	
370		-----		-----	D2386	-53.5		-0.25	
391		-----		-----	D2386	-54		-0.81	
398		-----		-----	D2386	-52.5		0.87	
399		-----		-----		-----		-----	
445	IP529	-53.5		-0.45	IP16	-53.24		0.04	
447		-----		-----		-----		-----	
463		-----		-----	D2386	-54		-0.81	
473		-----		-----	D2386	-53.5		-0.25	
495		-----		-----	D2386	-55.5		-2.49	
594		-----		-----		-----		-----	
601		-----		-----	D2386	-52.0		1.43	
604		-----		-----	D2386	-53.5		-0.25	
606		-----		-----	D2386	-52.0		1.43	
631		-----		-----	D2386	-55.5		-2.49	
671		-----		-----	D2386	-53.0		0.31	
824		-----		-----	D2386	-53.5		-0.25	
875		-----		-----		-----		-----	
922		-----		-----		-----		-----	
962		-----		-----		-----		-----	
963		-----		-----		-----		-----	
974		-----		-----	D2386	-54.5		-1.37	
997		-----		-----	D2386	-53.5		-0.25	
1021		-----		-----		-----		-----	
1026	D5972	-53.3		0.17	D2386	-53.5		-0.25	
1039	IP529	-54.0	C	-2.01		-----		-----	was reported under manual
1049	D7153	-54.3		-2.94		-----		-----	
1059		-----		-----	D2386	-51.5		1.99	
1062	D7153	-53.8		-1.38		-----		-----	
1064	D7153	-53.1		0.79	D2386	-52.5		0.87	
1079	D5972	-53.9		-1.69		-----		-----	
1081	D7153	-53.3		0.17		-----		-----	
1097	IP529	-53.0		1.11	ISO3013	-52.77		0.57	
1105	D7153	-53.0		1.11		-----		-----	
1109	D5972	-54.3		-2.94	IP16	-54.5		-1.37	
1126		-----		-----		-----		-----	
1146		-----		-----		-----		-----	
1150		-----		-----	D2386	-53.5		-0.25	
1161		-----		-----	D2386	<-57		-----	
1167		-----		-----		-----		-----	
1201	D7153	-53.2		0.48	D2386	-53.5		-0.25	
1203		-----		-----	D2386	-53		0.31	
1237		-----		-----		-----		-----	
1284		-----		-----		-----		-----	
1299		-----		-----	D2386	-51.5		1.99	
1318	D7153	-52.9		1.42		-----		-----	
1347		-----		-----	D2386	-53.0		0.31	
1348		-----		-----	D2386	-52.5		0.87	
1372	D7153	-53.8		-1.38		-----		-----	
1373		-----		-----		-----		-----	

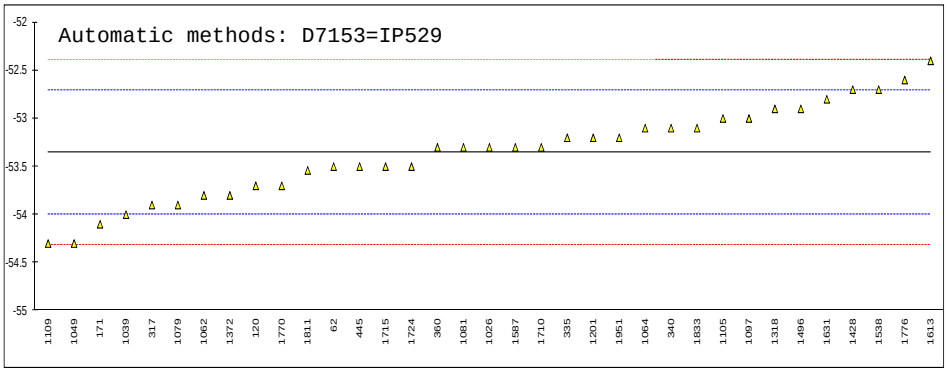
1423		-----	-----
1428	D7153	-52.7	2.04
1487		-----	-----
1496	D5972	-52.9	1.42
1531		-----	-----
1538	D5972	-52.7	2.04
1586		-----	-----
1587	IP529	-53.3	0.17
1610		-----	-----
1613	D7153	-52.4	2.97
1631	D7153	-52.8	1.73
1634		-----	-----
1678		-----	-----
1710	D7153	-53.3	0.17
1715	D5972	-53.5	-0.45
1720		-----	-----
1724	IP435	-53.5	-0.45
1730		-----	-----
1741		-----	-----
1755		-----	-----
1757		-----	-----
1770	D7153	-53.7	-1.07
1776	IP529	-52.6	2.35
1784		-----	-----
1787		-----	-----
1792		-----	-----
1794		-----	-----
1798		-----	-----
1811	D7153	-53.54	-0.57
1833	IP435	-53.1	0.79
1842		-----	-----
1854		-----	-----
1951	D7153	-53.2	0.48
2129		-----	-----
2130		-----	-----

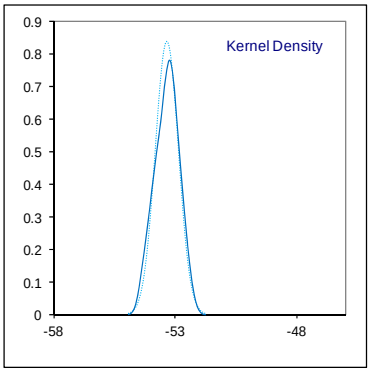
normality	OK	
n	35	
outliers	0	
mean (n)	-53.355	
st.dev. (n)	0.4759	
R(calc.)	1.332	
R(D7153:05)	0.900	R(D5972)/IP435= 0.8

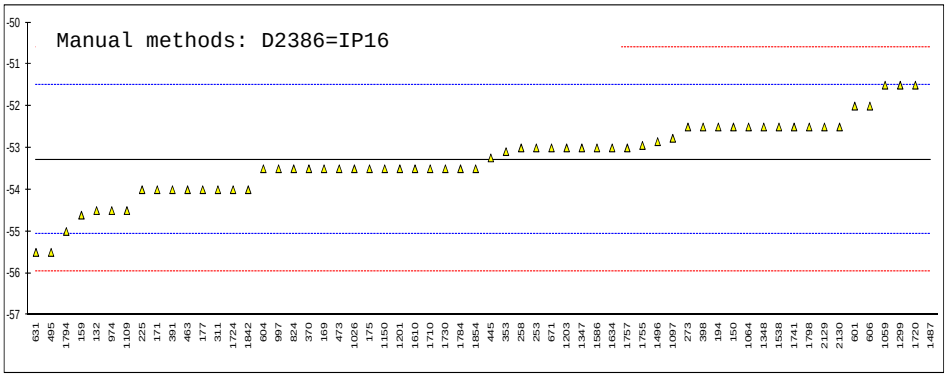
	-----		-----
	-----		-----
D2386	-49.5	R(0.01)	4.23
D2386	-52.85		0.48
	-----		-----
D2386	-52.5		0.87
D2386	-53		0.31
	-----		-----
IP16	-53.5		-0.25
	-----		-----
	-----		-----
D2386	-53.0		0.31
	-----		-----
D2386	-53.5		-0.25
	-----		-----
D2386	-51.5		1.99
D2386	-54		-0.81
D2386	-53.5		-0.25
D2386	-52.5		0.87
D2386	-52.942	C	0.38
D2386	-53.0	C	0.31
	-----		-----
	-----		-----
D2386	-53.5		-0.25
	-----		-----
	-----		-----
ISO3013	-55		-1.93
D2386	-52.5		0.87
	-----		-----
	-----		-----
D2386	-54.0		-0.81
D2386	-53.5		-0.25
	-----		-----
D2386	-52.5		0.87
D2386	-52.5		0.87

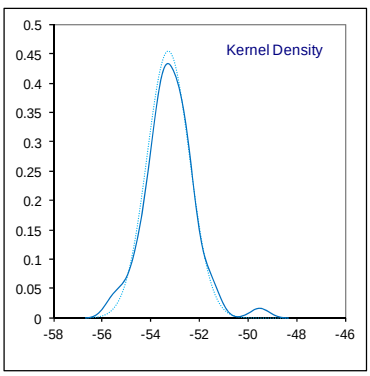
was reported under automated
first reported: 53.0

normality	OK	
n	59	
outliers	1	
mean (n)	-53.280	
st.dev. (n)	0.8771	
R(calc.)	2.456	
R(D2386:06)	2.500	R(ISO3013) = 2.3









Determination of JFTOT; Tube Rating, Delta P in mmHg, Pumped Vol. in mL, Temp. in ^{o}C

lab	method	Tube	mark	Delta P	mark	Volume	mark	temp	mark	remarks
62	D3241	0		0.3		440		260		
90		-----		-----		-----		-----		
120	D3241	1		0		475		260		
132	D3241	<1		0.2		450		260		
150	D3241	<1		0		450		260		
159	D3241	1		0.1		450		260		
169	D3241	<2		1		450		260		
171	D3241	<1		0		450		260		
175	D3241	<1		1		435		260		
177	D3241	1		1		450		260		
194	D3241	<1		1		450		260		
225	D3241	1		0.2	C	460		260.0		first reported: 4.1
228		-----		-----		-----		-----		
237		-----		-----		-----		-----		
238		-----		-----		-----		-----		
253	D3241	<1		0		450		260		
258	D3241	1.0		0.4		460		260		
273		-----		-----		-----		-----		
311	D3241	<1		<1		450		260		
317		-----		-----		-----		-----		
335	D3241	<1		0		450		260		
336		-----		-----		-----		-----		
340	D3241	1		0.4		450		260		
353		-----		-----		-----		-----		
360	D3241	0		2	R(0.01)	450		260		
370	D3241	<1		<3		510		260		
391	D3241	0		0		460		260		
398		-----		-----		-----		-----		
399		-----		-----		-----		-----		
445	IP123	1		<1		475		260		
447		-----		-----		-----		-----		
463		-----		-----		-----		-----		
473		-----		-----		-----		-----		
495	D3241	<1		0		460		260		
594		-----		-----		-----		-----		
601		-----		-----		-----		-----		
604		-----		-----		-----		-----		
606		-----		-----		-----		-----		
631	D3241	<2		<1.0		445		260		
671	D3241	1		0.3		450		260.0		
824	D3241	<1		0		450		260		
875		-----		-----		-----		-----		
922		-----		-----		-----		-----		
962		-----		-----		-----		-----		
963		-----		-----		-----		-----		
974	D3241	<1		0		450		260		
997		-----		-----		-----		-----		
1021		-----		-----		-----		-----		
1026		-----		-----		-----		-----		
1039	D3241	<1		<1		450		260		
1049	D3241	1		0.0		450		260		
1059		-----		-----		-----		-----		
1062	D3241	0		0.1		510		260		
1064	D3241	1		0		450		260		
1079	D3241	<1		0		450		260		
1081	D3241	<1		0		450		260		
1097	D3241	0		0		455		260		
1105	D3241	1		<1		470		260		
1109	D3241	<1		0.0		450		260		
1126		-----		-----		-----		-----		
1146	D3241	<1		0.6		450		260		
1150		-----		-----		-----		-----		
1161		-----		-----		-----		-----		
1167		-----		-----		-----		-----		
1201	D3241	<1		<1		450		260		
1203		-----		-----		-----		-----		
1237	D3241	<1		0.0		450		260		
1284		-----		-----		-----		-----		
1299	D3241	1		0		450		260		
1318	D3241	<1		0.0		450		260		
1347	D3241	1		1		450		260		
1348	D3241	1		1		500		260		
1372	D3241	<1		0.0		460		260		

1373		-----	-----	-----	-----
1423		-----	-----	-----	-----
1428	D3241	<1	0	455	260
1487		-----	-----	-----	-----
1496	D3241	0.0	0	450	260
1531		-----	-----	-----	-----
1538	D3241	<1	<0.1	450	260
1586	D3241	1	0.9	480	260
1587	D3241	<1	0.1	510	260
1610	IP323	<1	1	450	260
1613	D3241	<1	0.0	450	260
1631	D3241	<1	0.0	450	260
1634		-----	-----	-----	-----
1678		-----	-----	-----	-----
1710	D3241	1	0	450	260
1715		-----	-----	-----	-----
1720		-----	-----	-----	-----
1724	D3241	1	0	510	260
1730	D3241	0	1	470	260
1741	D3241	1	0	480	260
1755		-----	-----	-----	-----
1757		-----	-----	-----	-----
1770		-----	-----	-----	-----
1776		-----	-----	-----	-----
1784	D3241	<1	0	450	260
1787		-----	-----	-----	-----
1792		-----	-----	-----	-----
1794		-----	-----	-----	-----
1798		-----	-----	-----	-----
1811		-----	-----	-----	-----
1833	D3241	<1	0.0	510	260
1842	IP123	1	1	450	260
1854	D3241	<1	0	450	260
1951	D3241	<1	0.1	-----	260
2129	D3241	<1	0	450	260
2130	D3241	1	0	450	260

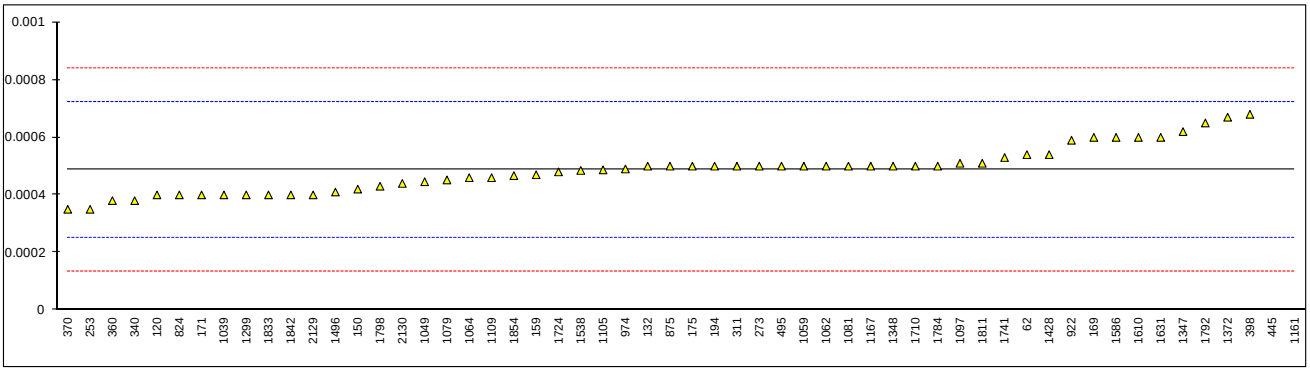
normality	OK	suspect
n	27	52
outliers	0	1
mean (n)	0.74	0.24
st.dev. (n)	0.447	0.388
R(calc.)	1.25	1.09
R(D3241:12)	n.a.	n.a

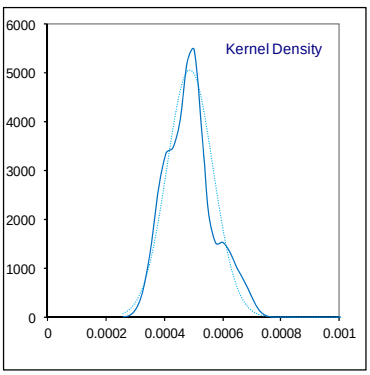
Determination of Mercaptan Sulphur on sample #14016; results in % M/M

lab	method	value	mark	z(targ)	remarks
62	D3227	0.00054		0.45	
90		-----		-----	
120	D3227	0.0004		-0.74	
132	D3227	0.0005		0.11	
150	D3227	0.00042	C	-0.57	first reported: 4.2
159	D3227	0.00047		-0.14	
169	D3227	0.0006		0.96	
171	D3227	0.0004		-0.74	
175	D3227	0.0005		0.11	
177		-----		-----	
194	D3227	0.0005		0.11	
225		-----		-----	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253	D3227	0.00035		-1.16	
258		-----		-----	
273	D3227	0.0005		0.11	
311	D3227	0.0005		0.11	
317		-----		-----	
335		-----		-----	
336		-----		-----	
340	D3227	0.00038		-0.91	
353		-----		-----	
360	D3227	0.00038		-0.91	
370	D3227	0.00035		-1.16	
391		-----		-----	
398	D3227	0.00068		1.64	
399		-----		-----	
445	D3227	0.0020	R(0.01)	12.82	
447		-----		-----	
463		-----		-----	
473		-----		-----	
495	D3227	0.0005		0.11	
594		-----		-----	
601		-----		-----	
604		-----		-----	
606		-----		-----	
631		-----		-----	
671		-----		-----	
824	D3227	0.0004		-0.74	
875	D3227	0.0005		0.11	
922	D3227	0.00059		0.87	
962		-----		-----	
963		-----		-----	
974	D3227	0.00049		0.03	
997		-----		-----	
1021		-----		-----	
1026		-----		-----	
1039	UOP163	0.0004		-0.74	
1049	D3227	0.000446		-0.35	
1059	D3227	0.0005		0.11	
1062	D3227	0.0005		0.11	
1064	D3227	0.00046		-0.23	
1079	D3227	0.000452		-0.30	
1081	D3227	0.0005		0.11	
1097	ISO3012	0.00051		0.20	
1105	D3227	0.000487		0.00	
1109	D3227	0.00046		-0.23	
1126		-----		-----	
1146		-----		-----	
1150		-----		-----	
1161	D3227	0.0064	R(0.01)	50.10	
1167	ISO3012	0.0005		0.11	
1201		-----		-----	
1203		-----		-----	
1237		-----		-----	
1284		-----		-----	
1299	D3227	0.0004		-0.74	
1318		-----		-----	
1347	D3227	0.00062		1.13	
1348	D3227	0.0005		0.11	
1372	D3227	0.00067		1.55	
1373		-----		-----	

1423		-----		-----	
1428	D3227	0.00054		0.45	
1487		-----		-----	
1496	D3227	0.00041		-0.65	
1531		-----		-----	
1538	D3227	0.000485		-0.02	
1586	D3227	0.0006	C	0.96	first reported: 0.0009
1587		-----		-----	
1610	IP342	0.00060		0.96	
1613		-----		-----	
1631	D3227	0.0006		0.96	
1634		-----		-----	
1678		-----		-----	
1710	D3227	0.0005		0.11	
1715		-----		-----	
1720		-----		-----	
1724	D3227	0.00048		-0.06	
1730		-----		-----	
1741	D3227	0.00053		0.36	
1755		-----		-----	
1757		-----		-----	
1770		-----		-----	
1776		-----		-----	
1784	D3227	0.0005		0.11	
1787		-----		-----	
1792	D3227	0.00065	C	1.38	first reported: 0.00082
1794		-----		-----	
1798	D3227	0.00043		-0.48	
1811	D3227	0.00051		0.20	
1833	D3227	0.0004		-0.74	
1842	IP342	0.0004		-0.74	
1854	D3227	0.000467		-0.17	
1951		-----		-----	
2129	D3227	0.0004		-0.74	
2130	D3227	0.00044		-0.40	

normality	OK
n	54
outliers	2
mean (n)	0.00049
st.dev. (n)	0.000079
R(calc.)	0.00022
R(D3227:10)	0.00033



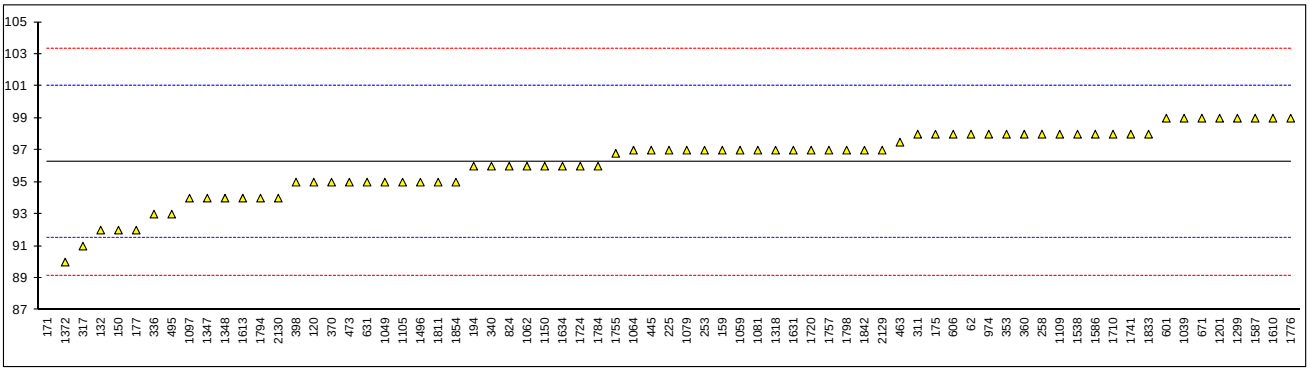


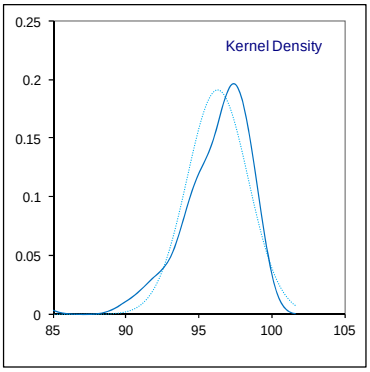
Determination of MSEP on sample #14016;

lab	method	value	mark	z(targ)	remarks
62	D3948	98		0.73	
90		-----		-----	
120	D3948	95		-0.53	
132	D3948	92		-1.80	
150	D3948	92		-1.80	
159	D3948	97		0.31	
169		-----		-----	
171	D3948	84	C,R(0.01)	-5.18	first reported: 88
175	D3948	98		0.73	
177	D3948	92		-1.80	
194	D3948	96		-0.11	
225	D3948	97		0.31	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253	D3948	97		0.31	
258	D3948	98		0.73	
273		-----		-----	
311	D3948	98		0.73	
317	D3948	91		-2.22	
335		-----		-----	
336	D3948	93		-1.38	
340	D3948	96		-0.11	
353	D3948	98		0.73	
360	D3948	98		0.73	
370	D3948	95		-0.53	
391		-----		-----	
398	D3948	95		-0.53	
399		-----		-----	
445	D3948	97		0.31	
447		-----		-----	
463	D3948	97.5		0.52	
473	D3948	95		-0.53	
495	D3948	93.0		-1.38	
594		-----		-----	
601	D3948	99		1.16	
604		-----		-----	
606	D3948	98		0.73	
631	D3948	95		-0.53	
671	D3948	99		1.16	
824	D3948	96		-0.11	
875		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
974	D3948	98		0.73	
997		-----		-----	
1021		-----		-----	
1026		-----		-----	
1039	D3948	99		1.16	
1049	D3948	95		-0.53	
1059	D3948	97		0.31	
1062	D3948	96		-0.11	
1064	D3948	97		0.31	
1079	D3948	97		0.31	
1081	D3948	97		0.31	
1097	D3948	94		-0.96	
1105	D3948	95		-0.53	
1109	D3948	98		0.73	
1126		-----		-----	
1146		-----		-----	
1150	D3948	96		-0.11	
1161		-----		-----	
1167		-----		-----	
1201	D3948	99		1.16	
1203		-----		-----	
1237		-----		-----	
1284		-----		-----	
1299	D3948	99		1.16	
1318	D3948	97		0.31	
1347	D3948	94		-0.96	
1348	D3948	94		-0.96	
1372	D3948	90		-2.65	
1373		-----		-----	

1423		-----	-----
1428		-----	-----
1487		-----	-----
1496	D3948	95	-0.53
1531		-----	-----
1538	D3948	98	0.73
1586	D3948	98	0.73
1587	D3948	99	1.16
1610	D3948	99	1.16
1613	D3948	94.0	-0.96
1631	D3948	97	0.31
1634	D3948	96	-0.11
1678		-----	-----
1710	D3948	98	0.73
1715		-----	-----
1720	D3948	97	0.31
1724	D3948	96	-0.11
1730		-----	-----
1741	D3948	98	0.73
1755	D3948	96.8	0.23
1757	D3948	97	0.31
1770		-----	-----
1776	D3948	99	1.16
1784	D3948	96	-0.11
1787		-----	-----
1792		-----	-----
1794	D3948	94	-0.96
1798	D3948	97	0.31
1811	D3948	95.0	-0.53
1833	D3948	98	0.73
1842	D3948	97	0.31
1854	D3948	95	-0.53
1951		-----	-----
2129	D3948	97	0.31
2130	D3948	94	-0.96

normality	OK
n	70
outliers	1
mean (n)	96.26
st.dev. (n)	2.092
R(calc.)	5.86
R(D3948:11)	6.63



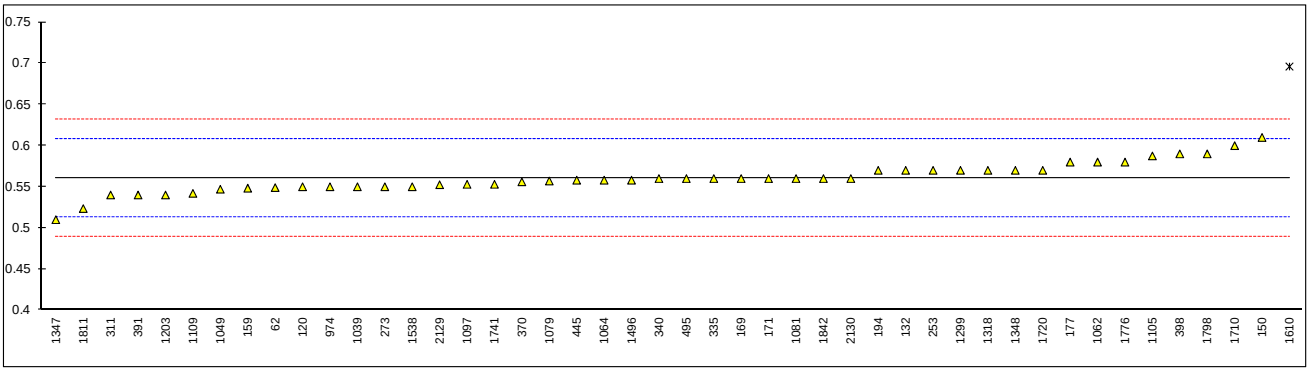


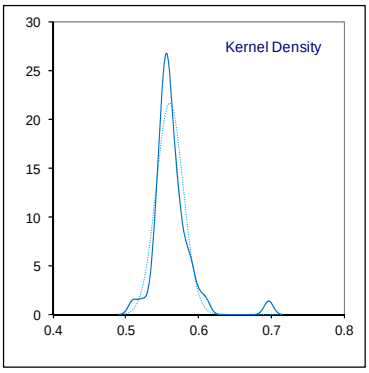
Determination of Naphthalenes on sample #14016; results in %V/V

lab	method	value	mark	z(targ)	remarks
62	D1840-A	0.549		-0.49	
90		-----		-----	
120	D1840-B	0.55		-0.44	
132	D1840-B	0.57		0.40	
150	D1840-A	0.61		2.09	
159	D1840-B	0.5483		-0.51	
169	D1840-B	0.56		-0.02	
171	D1840-B	0.56		-0.02	
175		-----		-----	
177	D1840	0.58		0.82	
194	D1840-B	0.57		0.40	
225		-----		-----	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253	D1840- B	0.57		0.40	
258		-----		-----	
273	D1840-B	0.55		-0.44	
311	D1840-B	0.54		-0.86	
317		-----		-----	
335	D1840-A	0.56		-0.02	
336		-----		-----	
340	D1840-B	0.560		-0.02	
353		-----		-----	
360		-----		-----	
370	D1840-A	0.556		-0.19	
391	D1840-B	0.54		-0.86	
398	D1840-B	0.590		1.24	
399		-----		-----	
445	D1840-B	0.558		-0.11	
447		-----		-----	
463		-----		-----	
473		-----		-----	
495	D1840-B	0.56		-0.02	
594		-----		-----	
601		-----		-----	
604		-----		-----	
606		-----		-----	
631		-----		-----	
671		-----		-----	
824		-----		-----	
875		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
974	D1840-A	0.55		-0.44	
997		-----		-----	
1021		-----		-----	
1026		-----		-----	
1039	D1840-B	0.55		-0.44	
1049	D1840-A	0.547		-0.57	
1059		-----		-----	
1062	D1840-A	0.58	C	0.82	first reported: 0.76
1064	D1840-A	0.558		-0.11	
1079	D1840-A	0.557	C	-0.15	first reported: 0.471
1081	D1840-B	0.56		-0.02	
1097	D1840-A	0.553		-0.32	
1105	D1840-A	0.5875		1.14	
1109	D1840-B	0.542		-0.78	
1126		-----		-----	
1146		-----		-----	
1150		-----		-----	
1161		-----		-----	
1167		-----		-----	
1201		-----		-----	
1203	D1840-A	0.54		-0.86	
1237		-----		-----	
1284		-----		-----	
1299	D1840	0.57		0.40	
1318	D1840-B	0.57		0.40	
1347	D1840-B	0.510		-2.13	
1348	D1840-B	0.57		0.40	
1372		-----		-----	
1373		-----		-----	

1423		-----		-----	
1428		-----		-----	
1487		-----		-----	
1496	D1840-B	0.558		-0.11	
1531		-----		-----	
1538	D1840-B	0.55		-0.44	
1586		-----		-----	
1587		-----		-----	
1610	D1840-B	0.69619	R(0.01)	5.72	
1613		-----		-----	
1631		-----		-----	
1634		-----		-----	
1678		-----		-----	
1710	D1840-A	0.60		1.66	
1715		-----		-----	
1720	D1840-B	0.57	C	0.40	first reported: 0.76
1724		-----		-----	
1730		-----		-----	
1741	D1840-A	0.553		-0.32	
1755		-----		-----	
1757		-----		-----	
1770		-----		-----	
1776	D1840-B	0.58		0.82	
1784		-----		-----	
1787		-----		-----	
1792		-----		-----	
1794		-----		-----	
1798	D1840-B	0.59		1.24	
1811	D1840-A	0.5235		-1.56	
1833		-----		-----	
1842	D1840-A	0.56		-0.02	
1854		-----		-----	
1951		-----		-----	
2129	D1840-B	0.5525		-0.34	
2130	D1840-B	0.56		-0.02	

			Only D1840-A	Only D1840-B
	normality	suspect	OK	not OK
	n	45	16	27
	outliers	1	0	1
	mean (n)	0.561	0.562	0.559
	st.dev. (n)	0.0185	0.0223	0.0164
	R(calc.)	0.052	0.062	0.046
	R(D1840:07-B)	0.066	0.047	0.066



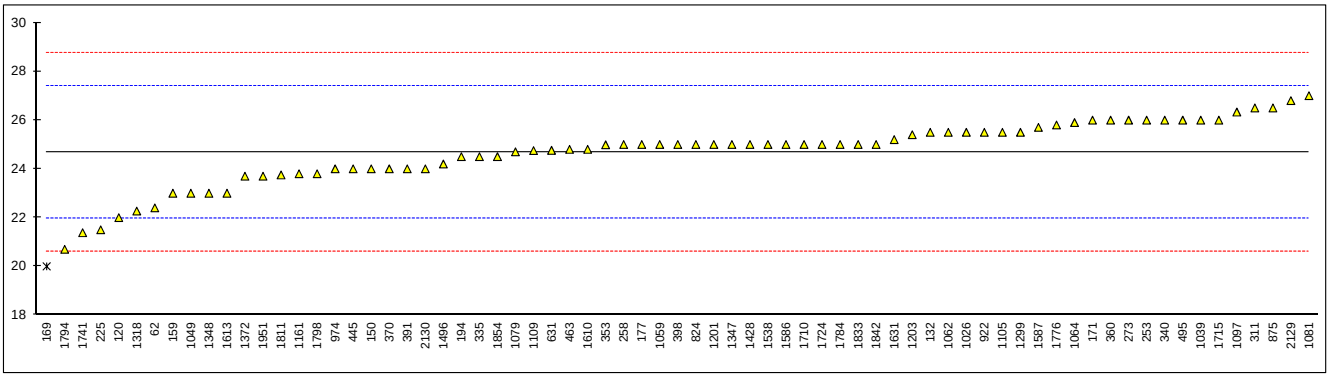


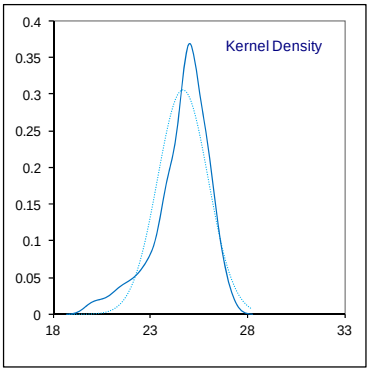
Determination of Smoke Point on sample #14016; results in mm.

lab	method	value	mark	z(targ)	remarks
62	D1322-M	22.4		-1.69	
90		-----		-----	
120	D1322	22		-1.98	
132	D1322-M	25.5		0.59	
150	D1322-M	24		-0.51	
159	D1322-M	23		-1.25	
169	D1322-M	20	R(0.05)	-3.45	
171	D1322-M	26		0.96	
175		-----		-----	
177	D1322-M	25		0.22	
194	D1322-M	24.5		-0.14	
225	D1322-M	21.5		-2.35	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253	D1322-M	26		0.96	
258	D1322-M	25		0.22	
273	D1322-M	26		0.96	
311	D1322-M	26.5		1.33	
317		-----		-----	
335	D1322-M	24.5		-0.14	
336		-----		-----	
340	D1322-M	26.00		0.96	
353	IP57-M	24.988		0.22	
360	D1322-M	26.0		0.96	
370	D1322-M	24.0		-0.51	
391	D1322-M	24		-0.51	
398	D1322-M	25		0.22	
399		-----		-----	
445	D1322-M	24		-0.51	
447		-----		-----	
463	D1322-M	24.8		0.08	
473		-----		-----	
495	D1322-M	26.0		0.96	
594		-----		-----	
601		-----		-----	
604		-----		-----	
606		-----		-----	
631	D1322-M	24.76		0.05	
671		-----		-----	
824	D1322-A	25.0		0.22	
875	D1322-M	26.5		1.33	
922	D1322-M	25.5		0.59	
962		-----		-----	
963		-----		-----	
974	D1322-A	24.0		-0.51	
997		-----		-----	
1021		-----		-----	
1026	D1322-A	25.5		0.59	
1039	D1322-M	26.0		0.96	
1049	D1322-M	23.0		-1.25	
1059	D1322-M	25.0		0.22	
1062	D1322	25.5		0.59	
1064	D1322-A	25.9		0.89	
1079	D1322-A	24.7		0.00	
1081	D1322	27.0		1.69	
1097	D1322-M	26.33		1.20	
1105	D1322-A	25.5		0.59	
1109	D1322-M	24.75		0.04	
1126		-----		-----	
1146		-----		-----	
1150		-----		-----	
1161	ISO3014-M	23.8		-0.66	
1167		-----		-----	
1201	D1322-M	25.0		0.22	
1203	INH-970-M	25.4		0.52	
1237		-----		-----	
1284		-----		-----	
1299	D1322-A	25.5		0.59	
1318	D1322-M	22.269		-1.78	
1347	D1322-M	25.0		0.22	
1348	D1322-M	23.0		-1.25	
1372	D1322-M	23.7		-0.73	
1373		-----		-----	

1423		-----		-----	
1428	D1322-M	25		0.22	
1487		-----		-----	
1496	D1322-M	24.2		-0.36	
1531		-----		-----	
1538	D1322-A	25.0		0.22	
1586	D1322-M	25		0.22	
1587	D1322-A	25.7	C	0.74	first reported: 18.4
1610	IP57	24.8		0.08	
1613	D1322-M	23.0		-1.25	
1631	D1322-A	25.2		0.37	
1634		-----		-----	
1678		-----		-----	
1710	D1322-M	25		0.22	
1715	D1322-M	26		0.96	
1720		-----		-----	
1724	D1322-M	25		0.22	
1730		-----		-----	
1741	D1322-M	21.38		-2.44	
1755		-----		-----	
1757		-----		-----	
1770		-----		-----	
1776	D1322-A	25.8		0.81	
1784	D1322-M	25		0.22	
1787		-----		-----	
1792		-----		-----	
1794	ISO3014-M	20.70		-2.94	
1798	D1322-M	23.8		-0.66	
1811	D1322-M	23.75		-0.69	
1833	D1322-A	25.0		0.22	
1842	D1322-M	25.0		0.22	
1854	D1322-M	24.5		-0.14	
1951	D1322-A	23.7		-0.73	
2129	D1322-M	26.8		1.55	
2130	D1322-M	24.0		-0.51	

normality	not OK
n	70
outliers	1
mean (n)	24.695
st.dev. (n)	1.3032
R(calc.)	3.649
R(D1322:12e2-M)	3.810



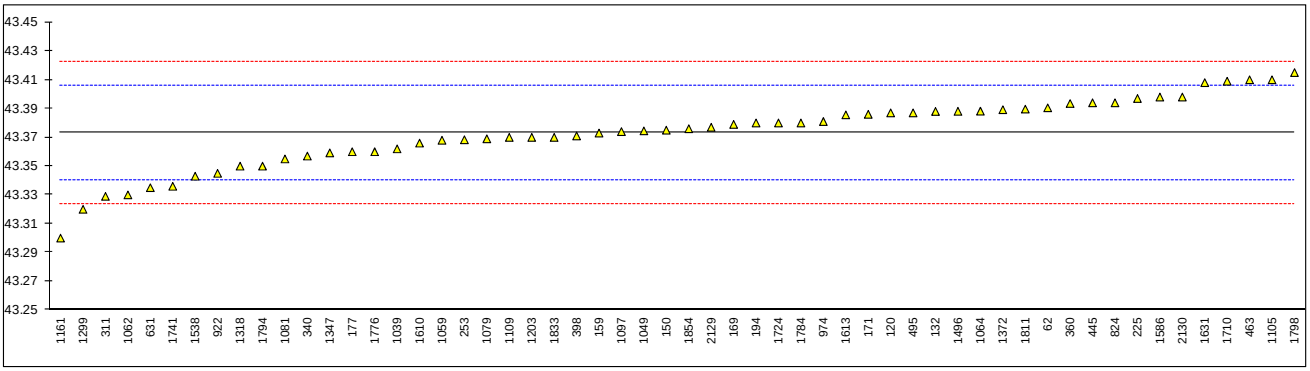


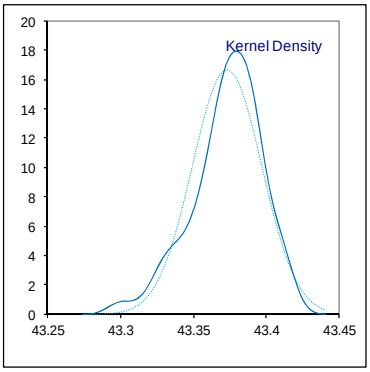
Determination of Specific Energy on sample #14016; results in MJ/kg

lab	method	value	mark	z(targ)	remarks
62	D3338	43.3905		1.05	
90		-----		-----	
120	D3338	43.387		0.84	
132	D3338	43.388		0.90	
150	D3338	43.375	C	0.11	first reported: 42.804
159	D3338	43.373		-0.01	
169	D3338	43.379		0.35	
171	D3338	43.386		0.78	
175		-----		-----	
177	D3338	43.36		-0.80	
194	D3338	43.380		0.41	
225	D3338	43.397		1.45	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253	D3338	43.3683		-0.30	
258		-----		-----	
273		-----		-----	
311	D3338	43.329		-2.69	
317		-----		-----	
335		-----		-----	
336		-----		-----	
340	D3338	43.357		-0.99	
353		-----		-----	
360	D3338	43.3935		1.24	
370		-----		-----	
391		-----		-----	
398	D3338	43.371		-0.13	
399		-----		-----	
445	D3338	43.394		1.27	
447		-----		-----	
463	D3338	43.41		2.24	
473		-----		-----	
495	D3338	43.387		0.84	
594		-----		-----	
601		-----		-----	
604		-----		-----	
606		-----		-----	
631	D3338	43.335		-2.32	
671		-----		-----	
824	D3338	43.394		1.27	
875		-----		-----	
922	D3338	43.345		-1.72	
962		-----		-----	
963		-----		-----	
974	D3338	43.381		0.48	
997		-----		-----	
1021		-----		-----	
1026		-----		-----	
1039	D3338	43.362		-0.68	
1049	D3338	43.3745		0.08	
1059	D3338	43.368		-0.32	
1062	D3338	43.33		-2.63	
1064	D3338	43.3882		0.91	
1079	D3338	43.369		-0.25	
1081	D3338	43.355		-1.11	
1097	D3338	43.374		0.05	
1105	D3338	43.41		2.24	
1109	D3338	43.37		-0.19	
1126		-----		-----	
1146		-----		-----	
1150		-----		-----	
1161	D3338	43.300		-4.45	
1167		-----		-----	
1201		-----		-----	
1203	D3338	43.37		-0.19	
1237		-----		-----	
1284		-----		-----	
1299	D3338	43.32		-3.24	
1318	D3338	43.350		-1.41	
1347	D3338	43.3592		-0.85	
1348		-----		-----	
1372	D3338	43.3892		0.97	
1373		-----		-----	

1423		-----	-----
1428		-----	-----
1487		-----	-----
1496	D3338	43.3881	0.91
1531		-----	-----
1538	D3338	43.343	-1.84
1586	D3338	43.398	1.51
1587		-----	-----
1610	D3338	43.366	-0.44
1613	D3338	43.38562	0.76
1631	D3338	43.408	2.12
1634		-----	-----
1678		-----	-----
1710	D3338	43.409	2.18
1715		-----	-----
1720		-----	-----
1724	D3338	43.380	0.41
1730		-----	-----
1741	D3338	43.336	-2.26
1755		-----	-----
1757		-----	-----
1770		-----	-----
1776	D3338	43.36	-0.80
1784	D3338	43.380	0.41
1787		-----	-----
1792		-----	-----
1794	ISO3648	43.35	-1.41
1798	D3338	43.415	2.55
1811	D3338	43.3896	1.00
1833	D3338	43.37	-0.19
1842		-----	-----
1854	D3338	43.376	0.17
1951		-----	-----
2129	D3338	43.377	0.23
2130	D3338	43.398	1.51

normality	OK
n	56
outliers	0
mean (n)	43.3732
st.dev. (n)	0.02394
R(calc.)	0.0670
R(D3338:09)	0.0460





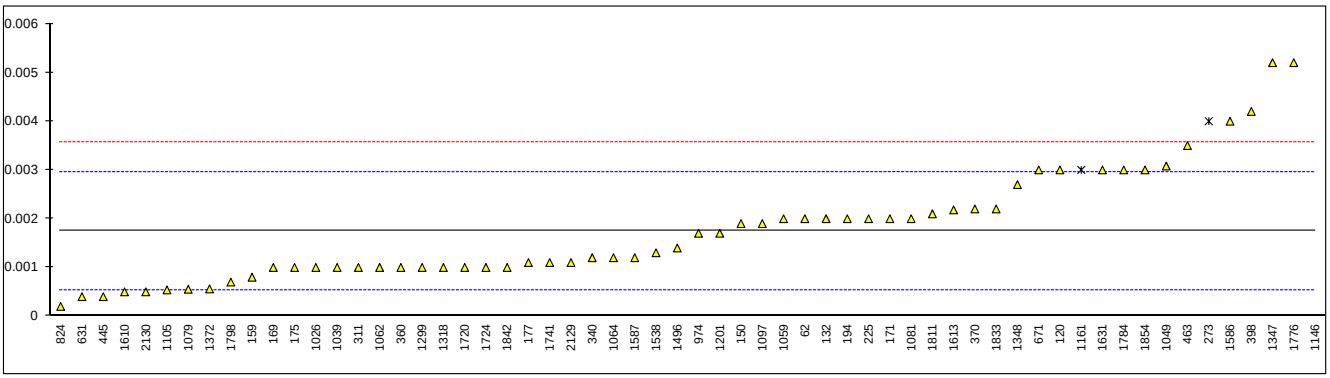
Determination of Total Acidity on sample #14016; results in mg KOH/g

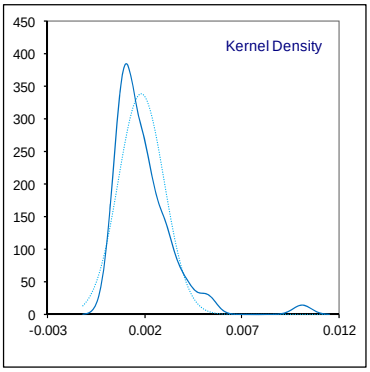
lab	method	value	mark	z(targ)	remarks
62	D3242-Y	0.002		0.42	
90		-----		-----	
120	D3242-Y	0.003		2.07	
132	D3242-Y	0.002		0.42	
150	D3242-Y	0.0019		0.25	
159	D3242-Y	0.0008		-1.56	
169	D3242-Y	0.001		-1.23	
171	D3242-N	0.002		0.42	
175	D3242-Y	0.001		-1.23	
177	D3242-Y	0.0011		-1.07	
194	D3242-Y	0.002		0.42	
225	D3242-Y	0.002		0.42	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253		-----		-----	
258		-----		-----	
273	D974	0.004	ex, C	3.72	first reported: 0.041, result excluded, see §4.1
311	D3242-Y	0.001		-1.23	
317		-----		-----	
335		-----		-----	
336		-----		-----	
340	D3242-Y	0.0012		-0.90	
353		-----		-----	
360	D3242-Y	0.0010		-1.23	
370	D3242-Y	0.0022		0.75	
391		-----		-----	
398	D3242-Y	0.0042		4.05	
399		-----		-----	
445	D3242-Y	0.0004		-2.22	
447		-----		-----	
463	D3242-Y	0.0035		2.90	
473		-----		-----	
495		-----		-----	
594		-----		-----	
601		-----		-----	
604		-----		-----	
606		-----		-----	
631	D3242-Y	0.0004		-2.22	
671	D3242-Y	0.003		2.07	
824	D3242-Y	0.0002		-2.55	
875		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
974	D3242-Y	0.0017		-0.08	
997		-----		-----	
1021		-----		-----	
1026	D3242-N	0.001		-1.23	
1039	D3242-Y	0.001		-1.23	
1049	D3242-Y	0.00308		2.20	
1059	D3242-Y	0.002		0.42	
1062	D3242-Y	0.001		-1.23	
1064	D3242-Y	0.0012		-0.90	
1079	D3242-Y	0.000553		-1.97	
1081	D3242-Y	0.002		0.42	
1097	D3242-Y	0.0019		0.25	
1105	D3242-Y	0.00054		-1.99	
1109		-----	W	-----	result withdrawn, first reported: 0.0042
1126		-----		-----	
1146	D664-N	0.0101	ex	13.79	result excluded, see §4.1
1150		-----		-----	
1161	D664-N	0.003	ex	2.07	result excluded, see §4.1
1167		-----		-----	
1201	D3242-Y	0.0017		-0.08	
1203	D3242-Y	<0.0003		-----	
1237		-----		-----	
1284		-----		-----	
1299	D3242-Y	0.001		-1.23	
1318	D3242-Y	0.0010		-1.23	
1347	D3242-Y	0.0052		5.70	
1348	D3242-Y	0.0027		1.57	
1372	D3242-Y	0.00056		-1.96	
1373		-----		-----	

1423		-----	-----
1428		-----	-----
1487		-----	-----
1496	D3242-Y	0.0014	-0.57
1531		-----	-----
1538	D3242-Y	0.0013	-0.74
1586	D3242-N	0.004	3.72
1587	D3242-Y	0.0012	-0.90
1610	IP354-Y	0.0005	-2.06
1613	D3242-Y	0.00218	0.72
1631	D3242-Y	0.0030	2.07
1634		-----	-----
1678		-----	-----
1710		-----	-----
1715		-----	-----
1720	D3242-Y	0.001	-1.23
1724	D3242-Y	0.001	-1.23
1730		-----	-----
1741	D3242-Y	0.0011	-1.07
1755		-----	-----
1757		-----	-----
1770		-----	-----
1776	D3242-Y	0.0052	5.70
1784	D3242-Y	0.003	2.07
1787		-----	-----
1792		-----	-----
1794		-----	-----
1798	D3242-Y	0.0007	-1.73
1811	D3242-Y	0.0021	0.58
1833	D3242-Y	0.0022	0.75
1842	IP354-Y	0.001	-1.23
1854	D3242-Y	0.003	2.07
1951		-----	-----
2129	D3242-Y	0.0011	-1.07
2130	D3242-Y	0.0005	-2.06

normality	not OK
n	57
outliers	0 + 3 excl
mean (n)	0.00175
st.dev. (n)	0.001152
R(calc.)	0.00322
R(D3242:11)	0.00170

application range: 0.000 to 0.100 mg KOH/g



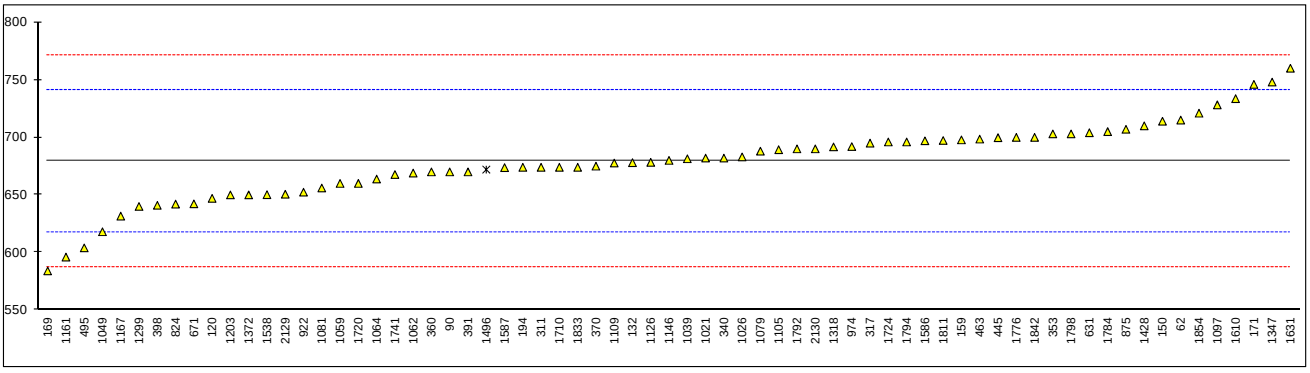


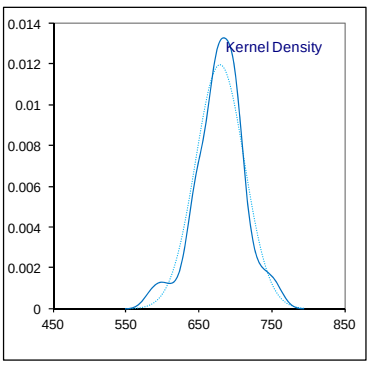
Determination of Total Sulphur on sample #14016; results in mg/kg

lab	method	value	mark	z(targ)	remarks
62	D5453	715	C	1.17	first reported: 586.6
90	D4294	670	C	-0.30	first reported: 0.0670
120	D4294	647		-1.05	
132	D5453	678		-0.04	
150	D5453	714		1.13	
159	D4294	697.8		0.61	
169	D4294	584		-3.10	
171	D5453	746		2.18	
175		-----		-----	
177		-----		-----	
194	D5453	674		-0.17	
225		-----		-----	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253		-----		-----	
258		-----		-----	
273		-----		-----	
311	D2622	674		-0.17	
317	D5453	695	C	0.52	first reported: 776
335		-----		-----	
336		-----		-----	
340	D4294	682		0.09	
353	IP336	703		0.78	
360	D4294	670		-0.30	
370	D5453	675		-0.13	
391	D5453	670		-0.30	
398	D4294	641		-1.24	
399		-----		-----	
445	D5453	699.7		0.67	
447		-----		-----	
463	D4294	698.5		0.63	
473		-----		-----	
495	D5453	604	C	-2.45	first reported: 456
594		-----		-----	
601		-----		-----	
604		-----		-----	
606		-----		-----	
631	D4294	704		0.81	
671	D5453	642.25		-1.20	
824	D5453	642		-1.21	
875	D5453	707		0.91	
922	D5453	652.4		-0.87	
962		-----		-----	
963		-----		-----	
974	D4294	692		0.42	
997		-----		-----	
1021	D2622	682		0.09	
1026	ISO20884	683	C	0.13	first reported: 863
1039	D2622	681.4		0.07	
1049	D5453	618	C	-1.99	probably unit error reported:0.0618
1059	ISO14596	660		-0.62	
1062	D5453	669		-0.33	
1064	D5453	663.8		-0.50	
1079	D2622	688		0.29	
1081	D4294	656		-0.75	
1097	D5453	728.18		1.60	
1105	D4294	689.3		0.33	
1109	D2622	677.7		-0.05	
1126	ISO20846	678.3		-0.03	
1146	D4294	680		0.03	
1150		-----		-----	
1161	ISO20846	596		-2.71	
1167	ISO20846	631.6		-1.55	
1201		-----		-----	
1203	EN14596	650	C	-0.95	first reported: 0.065
1237		-----		-----	
1284		-----		-----	
1299	D2622	640		-1.27	
1318	D4294	691.7		0.41	
1347	D4294	748		2.24	
1348		-----		-----	
1372	D4294	650	C	-0.95	first reported: 592
1373		-----		-----	

1423		-----		-----	
1428	ISO8754	710		1.00	
1487		-----		-----	
1496	D4294	672	C	-0.23	probably unit error reported:0.06720
1531		-----		-----	
1538	D4294	650.2		-0.94	
1586	D5453	697		0.58	
1587	D5453	673.7		-0.18	
1610	IP336	733.61		1.77	
1613		-----		-----	
1631	D5453	760		2.63	
1634		-----		-----	
1678		-----		-----	
1710	D5453	674		-0.17	
1715		-----		-----	
1720	D5453	660.0	C	-0.62	first reported: 569.0
1724	IP336	696		0.55	
1730		-----		-----	
1741	D5453	667.7		-0.37	
1755		-----		-----	
1757		-----		-----	
1770		-----		-----	
1776	D5453	700		0.68	
1784	D5453	705		0.84	
1787		-----		-----	
1792	D4294	690		0.35	
1794	D5453	696		0.55	
1798	IP336	703		0.78	
1811	D5453	697.3		0.59	
1833	D5453	674		-0.17	
1842	INH-16	700		0.68	
1854	D5453	721		1.36	
1951		-----		-----	
2129	D5453	650.6		-0.93	
2130	IP336	690		0.35	

			UVF data	XRF data	
	normality	OK	OK	OK	
	n	69	34	34	
	outliers	0	1	0	
	mean (n)	679.141	679.977	678.692	
	st.dev. (n)	33.0820	26.7541	36.9359	
	R(calc.)	92.630	74.911	103.420	
	R(D5453:12)	86.047	86.153	77.218	R(D4294:10)



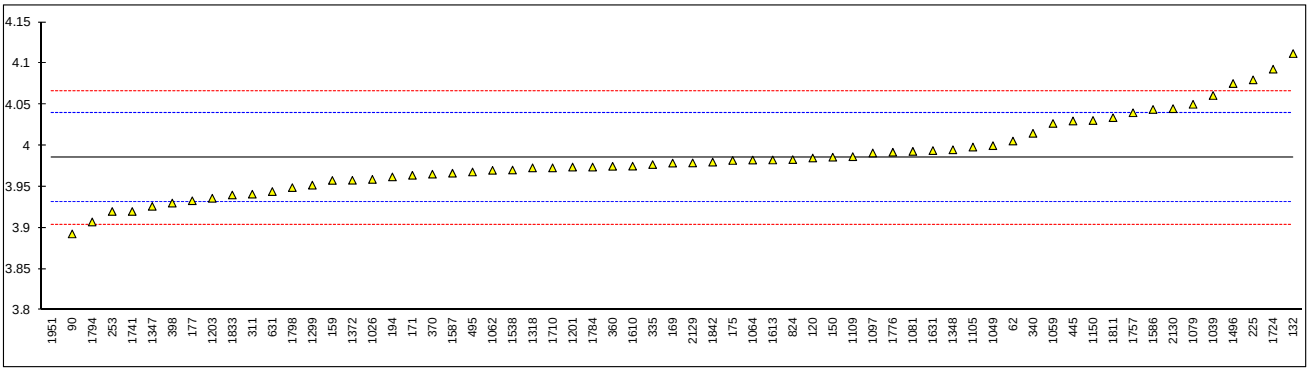


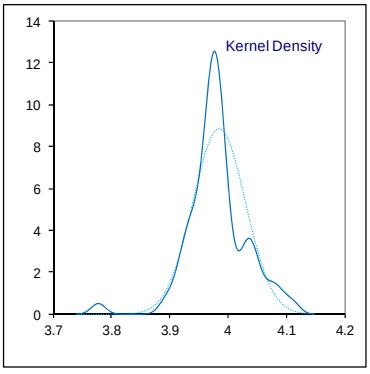
Determination of Viscosity @ -20°C on sample #14016; results in cSt

lab	method	value	mark	z(targ)	remarks
62	D445-M	4.0056		0.75	
90	D445-M	3.8927		-3.42	
120	D445	3.985		-0.01	
132	D445-M	4.112		4.69	
150	D445-A	3.986		0.03	
159	D445-M	3.9577		-1.02	
169	D445-M	3.9788		-0.24	
171	D445-M	3.964		-0.79	
175	D445-M	3.982		-0.12	
177	D445-M	3.933		-1.93	
194	D445-M	3.962		-0.86	
225	D445-M	4.080		3.50	
228		-----		-----	
237		-----		-----	
238		-----		-----	
253	D445-M	3.92	C	-2.41	first reported:3.82
258		-----		-----	
273		-----		-----	
311	D445-A	3.941		-1.64	
317		-----		-----	
335	D445-M	3.977		-0.30	
336		-----		-----	
340	D445-M	4.0150		1.10	
353		-----		-----	
360	D445-M	3.9749		-0.38	
370	D445-M	3.9653		-0.74	
391		-----		-----	
398	D445-M	3.9302		-2.04	
399		-----		-----	
445	D445-M	4.0300		1.65	
447		-----		-----	
463		-----		-----	
473		-----		-----	
495	D445-M	3.968		-0.64	
594		-----		-----	
601		-----		-----	
604		-----		-----	
606		-----		-----	
631	D445-M	3.9442		-1.52	
671		-----		-----	
824	ISO3104-M	3.983		-0.08	
875		-----		-----	
922		-----		-----	
962		-----		-----	
963		-----		-----	
974		-----		-----	
997		-----		-----	
1021		-----		-----	
1026	ISO3104-A	3.959		-0.97	
1039	D445-A	4.061		2.80	
1049	D445	4.000		0.55	
1059	D445-M	4.027		1.54	
1062	D445-M	3.97	C	-0.56	first reported:3.699
1064	D445-A	3.9825		-0.10	
1079	D445-M	4.0503		2.41	
1081	D445-M	3.993		0.29	
1097	ISO3104-M	3.9911		0.22	
1105	D445-A	3.9983		0.48	
1109	D445-M	3.9866		0.05	
1126		-----		-----	
1146		-----		-----	
1150	ISO3104-A	4.0306		1.68	
1161		-----		-----	
1167		-----		-----	
1201	D445-M	3.974		-0.42	
1203	D445-A	3.936		-1.82	
1237		-----		-----	
1284		-----		-----	
1299	D445-M	3.952		-1.23	
1318	D7042-A	3.9730		-0.45	
1347	D445-M	3.9262		-2.18	
1348	D445-M	3.995		0.36	
1372	D445-M	3.9579		-1.01	
1373		-----		-----	

1423		-----		-----	
1428		-----		-----	
1487		-----		-----	
1496	D445-M	4.07556		3.34	
1531		-----		-----	
1538	D445-M	3.970356		-0.55	
1586	D445-M	4.044		2.17	
1587	D445	3.9665		-0.69	
1610	IP71-M	3.97508		-0.38	
1613	D445-A	3.9826		-0.10	
1631	D445-A	3.994		0.32	
1634		-----		-----	
1678		-----		-----	
1710	D445-A	3.973		-0.45	
1715		-----		-----	
1720		-----		-----	
1724	D445-M	4.093		3.98	
1730		-----		-----	
1741	D445-M	3.9200		-2.41	
1755		-----		-----	
1757	D445-M	4.040		2.02	
1770		-----		-----	
1776	D7042	3.992		0.25	
1784	D445	3.974		-0.42	
1787		-----		-----	
1792		-----		-----	
1794	ISO3104-M	3.9072		-2.89	
1798	D445-M	3.949		-1.34	
1811	D445-A	4.034		1.80	
1833	D445-A	3.94	C	-1.67	first reported:3.849
1842	IP71-M	3.980		-0.19	
1854		-----		-----	
1951	D445-M	3.7782	R(0.01)	-7.66	
2129	D445-M	3.9790	C	-0.23	first reported:4.2042
2130	D445-M	4.045		2.21	

normality	OK
n	62
outliers	1
mean (n)	3.9852
st.dev. (n)	0.04501
R(calc.)	0.1260
R(D445:12)	0.0757

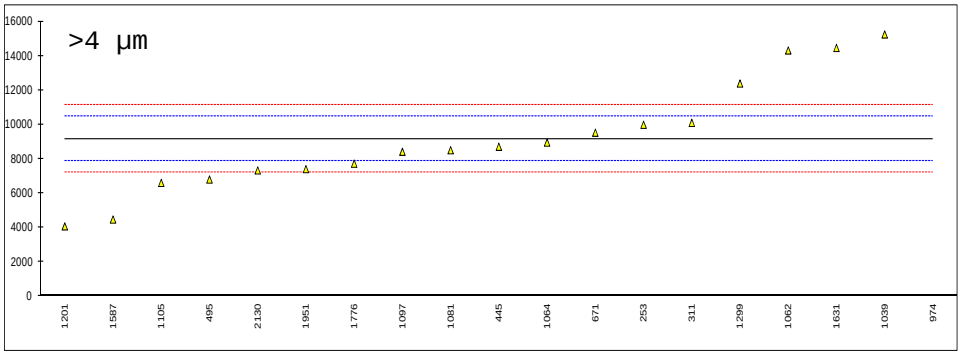


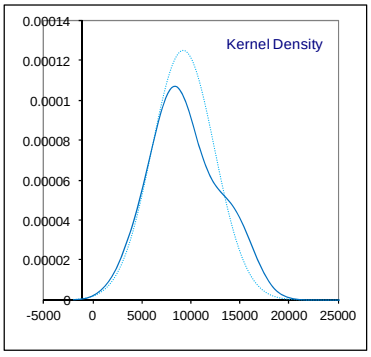


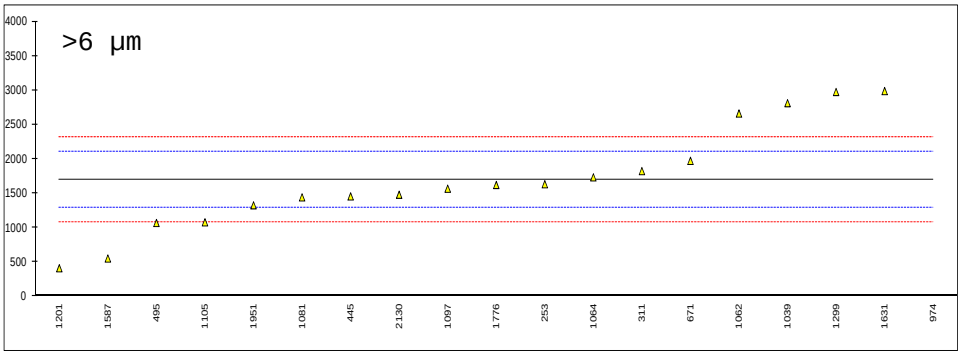
Determination of Particle Size Distribution on sample #14017 acc. to IP564.

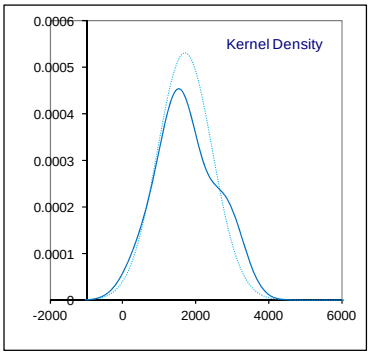
lab	method	>4 µm	>6 µm	>14 µm	>21 µm	>25 µm	>30 µm
150		-----	-----	-----	-----	-----	-----
171		-----	-----	-----	-----	-----	-----
225		-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----
253	IP564	9990	1633	36	11	5.5	2.2
311	IP564	10099	1824	40	6	2	1
335		-----	-----	-----	-----	-----	-----
360		-----	-----	-----	-----	-----	-----
370		-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----
445	IP564	8708.8	1455.8	44.7	11.7	5.6	2.4
495	IP564	6803	1069	24	4.4	2.1	1.3
671	IP564	9527.3	1973.0	54.4	9.0	4.1	1.2
922		-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----
974	IP564	**41948**	**11840**	45	8.0	4.4	2.3
1026		-----	-----	-----	-----	-----	-----
1039	IP564	15244	2812	71	14	6	2
1062	IP564	14313	2662	96.5	24.3	10.7	4.6
1064	IP564	8951.6	1733.2	46.7	7.6	2.7	0.5
1081	IP564	8506	1442	37	6.4	2.4	0.7
1095		-----	-----	-----	-----	-----	-----
1097	IP564	8416.9	1568.0	33.8	8.4	3.8	1.6
1105	IP564	6604.8	1079.0	17.3	2.9	1.1	0.5
1109		-----	-----	-----	-----	-----	-----
1146		-----	-----	-----	-----	-----	-----
1200		-----	-----	-----	-----	-----	-----
1201	IP564	4078.3	411	15.1	3.8	1.7	0.3
1299	IP564	12388.4	2974.9	88.3	20.5	6.2	0.9
1414		-----	-----	-----	-----	-----	-----
1587	IP564	4476.0	552.6	16.0	3.2	1.2	0.3
1610		-----	-----	-----	-----	-----	-----
1613		-----	-----	-----	-----	-----	-----
1631	IP564	14458	2988	82.8	13.4	5.2	1.6
1710		-----	-----	-----	-----	-----	-----
1720		-----	-----	-----	-----	-----	-----
1724		-----	-----	-----	-----	-----	-----
1741		-----	-----	-----	-----	-----	-----
1776	IP564	7724.1	1622.4	60.6	8.5	2.8	0.4
1784		-----	-----	-----	-----	-----	-----
1798		-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	-----	-----
1833		-----	-----	-----	-----	-----	-----
1951	IP564	7405.6	1326.4	84.0	**30.4**	**20.9**	**10.4**
2130	IP564	7331.5	1480.1	38.9	10.0	4.0	0.9
	normality	OK	OK	OK	not OK	not OK	not OK
	n	18	18	19	18	18	18
	outliers	1	1	0	1	1	1
	mean (n)	9168.1	1700.4	49.06	9.62	3.97	1.37
	st.dev. (n)	3193.03	753.08	25.222	5.711	2.364	1.067
	R(calc.)	8940.5	2108.6	70.62	15.99	6.62	2.99
	R(IP564:13)	1818.1	575.5	33.36	12.19	5.32	2.27

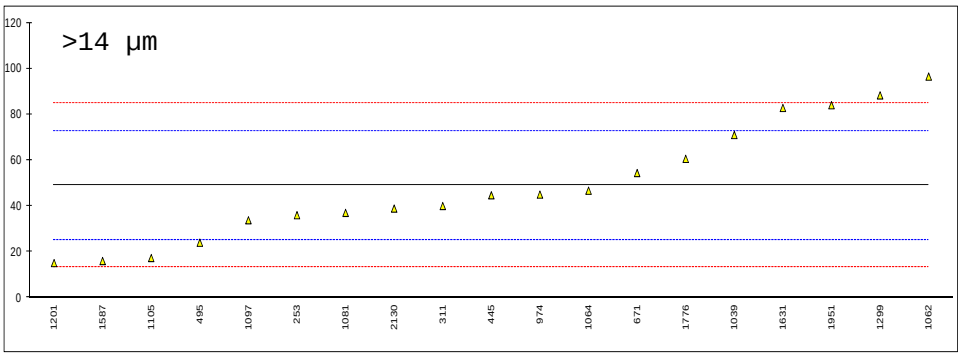
Bold and underlined test results: **statistical outliers acc. to Grubbs/Dixon/Rosner outlier test.**

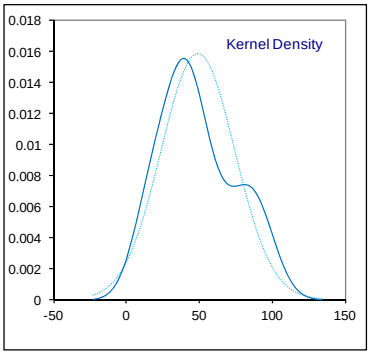


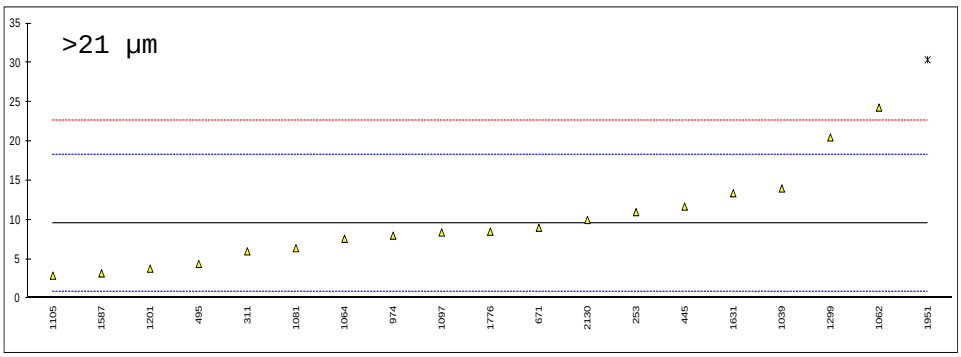



>6 µm
1201 1587 495 1105 1951 1081 445 2130 1097 1776 253 1064 311 671 1062 1039 1299 1631 974


Kernel Density


>14 µm
1201 1587 1105 495 1097 253 1081 2130 311 445 974 1064 671 1776 1039 1631 1951 1299 1062


Kernel Density


>21 µm
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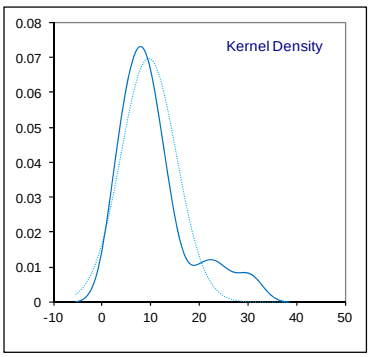
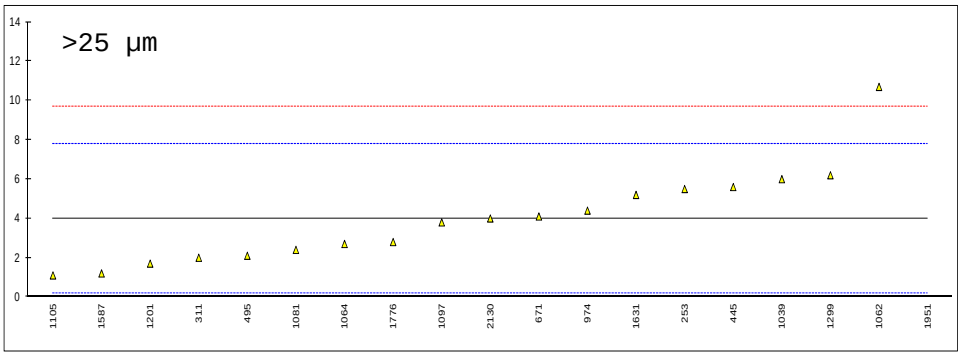
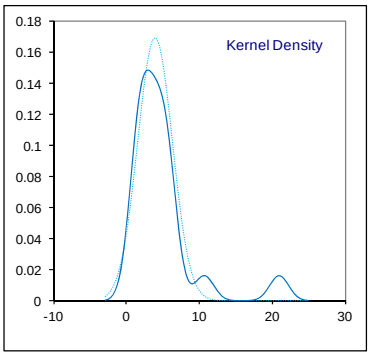
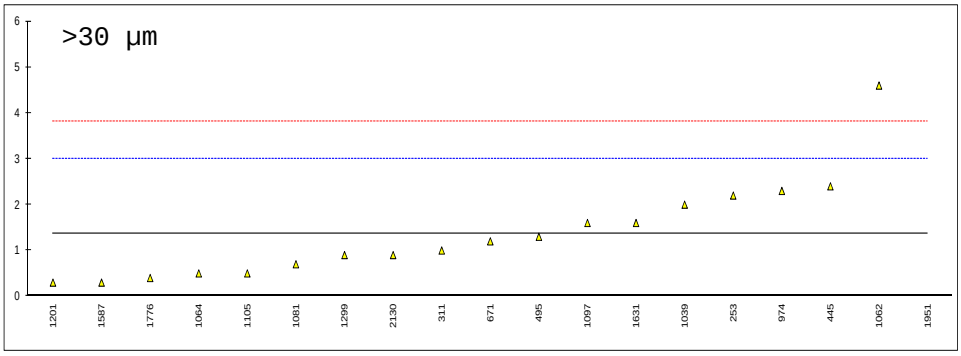
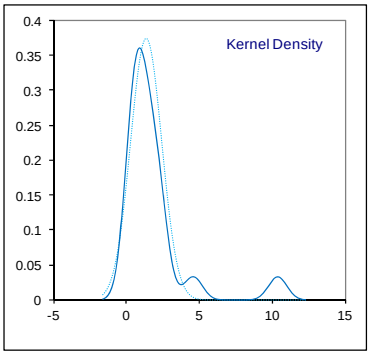

Kernel Density


>25 µm
1105 1587 1201 311 495 1081 1064 1776 1097 2130 671 974 1631 253 445 1039 1299 1062 1951

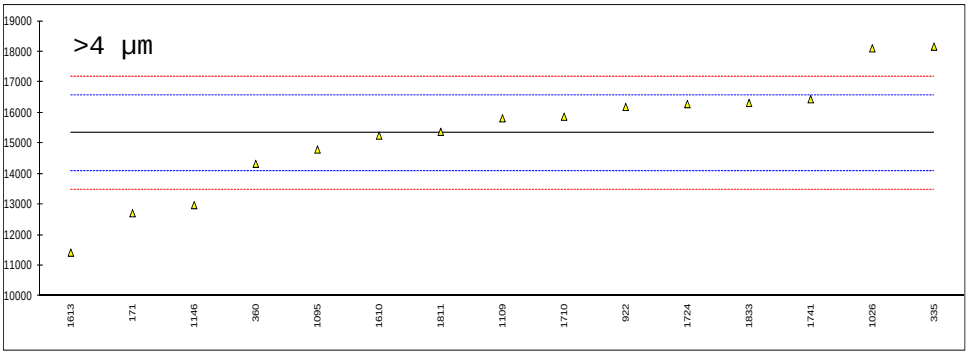

Kernel Density

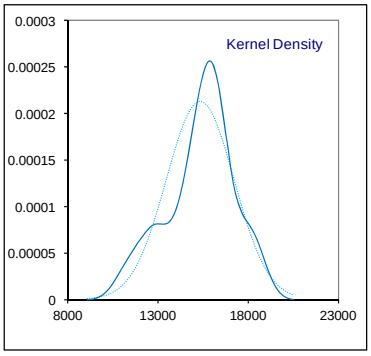

>30 µm
1201 1587 1776 1064 1105 1081 1299 2130 311 671 495 1097 1631 1039 253 974 445 1062 1951

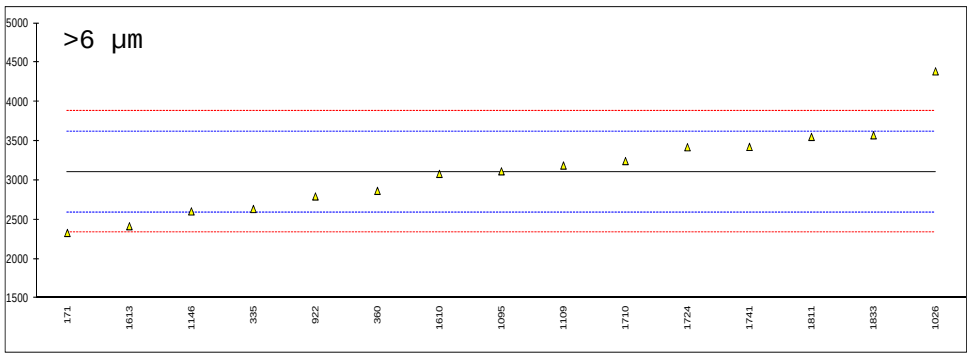

Kernel Density

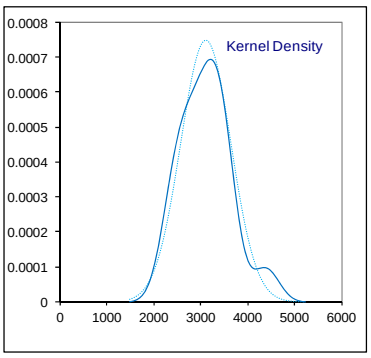
Determination of Particle Size Distribution on sample #14017 acc. to IP565.

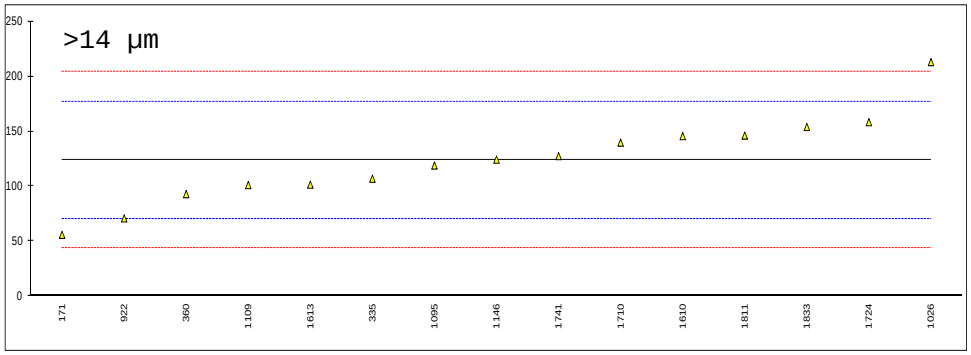
lab	method	>4 µm	>6 µm	>14 µm	>21 µm	>25 µm	>30 µm
150		-----	-----	-----	-----	-----	-----
171	IP565	12715	2331	56	8	3	1
225		-----	-----	-----	-----	-----	-----
237		-----	-----	-----	-----	-----	-----
253		-----	-----	-----	-----	-----	-----
311		-----	-----	-----	-----	-----	-----
335	IP565	18168	2636	107	26	12	5
360	IP565	14331.3	2866.9	93.0	16.2	5.9	1.1
370		-----	-----	-----	-----	-----	-----
391		-----	-----	-----	-----	-----	-----
445		-----	-----	-----	-----	-----	-----
495		-----	-----	-----	-----	-----	-----
671		-----	-----	-----	-----	-----	-----
922	IP565	16195.1	2795.0	70.9	15.6	7.2	2.8
963		-----	-----	-----	-----	-----	-----
974		-----	-----	-----	-----	-----	-----
1026	IP565	18112.3	4387.5	213	50	23	11
1039		-----	-----	-----	-----	-----	-----
1062		-----	-----	-----	-----	-----	-----
1064		-----	-----	-----	-----	-----	-----
1081		-----	-----	-----	-----	-----	-----
1095	IP565	14801	3115	119	26	13	5
1097		-----	-----	-----	-----	-----	-----
1105		-----	-----	-----	-----	-----	-----
1109	IP565	15822.0	3189.1	101.2	20.7	10.2	4.4
1146	in house	12980.27	2605.20	124.33	40.27	21.67	7.33
1200		-----	-----	-----	-----	-----	-----
1201		-----	-----	-----	-----	-----	-----
1299		-----	-----	-----	-----	-----	-----
1414		-----	-----	-----	-----	-----	-----
1587		-----	-----	-----	-----	-----	-----
1610	IP565	15256.6	3082.3	145.7	38.1	17.0	6.6
1613	IP565	11425.3	2416.1	101.6	20.2	9.2	4.1
1631		-----	-----	-----	-----	-----	-----
1710	IP565	15875.6	3245.4	139.8	33.0	15.6	7.3
1720		-----	-----	-----	-----	-----	-----
1724	IP565	16287.1	3421.6	158.4	25.5	9.3	2.5
1741	IP565	16445.5	3425.8	127.5	23.5	9.8	3.7
1776		-----	-----	-----	-----	-----	-----
1784		-----	-----	-----	-----	-----	-----
1798		-----	-----	-----	-----	-----	-----
1811	IP565	15379.5	3553.2	146.2	33.0	13.6	6.3
1833	IP565	16324	3574	154	37	19	8
1951		-----	-----	-----	-----	-----	-----
2130		-----	-----	-----	-----	-----	-----
	normality	OK	OK	OK	OK	OK	OK
	n	15	15	15	15	15	15
	outliers	0	0	0	0	0	0
	mean (n)	15341.2	3109.6	123.84	27.54	12.63	5.08
	st.dev. (n)	1873.14	533.99	38.702	11.039	5.754	2.739
	R(calc.)	5244.8	1495.2	108.37	30.91	16.11	7.67
	R(IP565:13)	1727.0	719.4	74.83	23.66	13.31	7.13

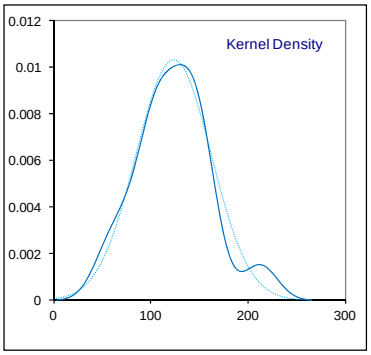





>6 µm
5000
4500
4000
3500
3000
2500
2000
1500
171 1613 1146 335 922 360 1610 1095 1109 1710 1724 1741 1811 1833 1026


Kernel Density
0.0008
0.0007
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0
0 1000 2000 3000 4000 5000 6000


>14 µm
250
200
150
100
50
0
171 922 360 1109 1613 335 1095 1146 1741 1710 1610 1811 1833 1724 1026


Kernel Density
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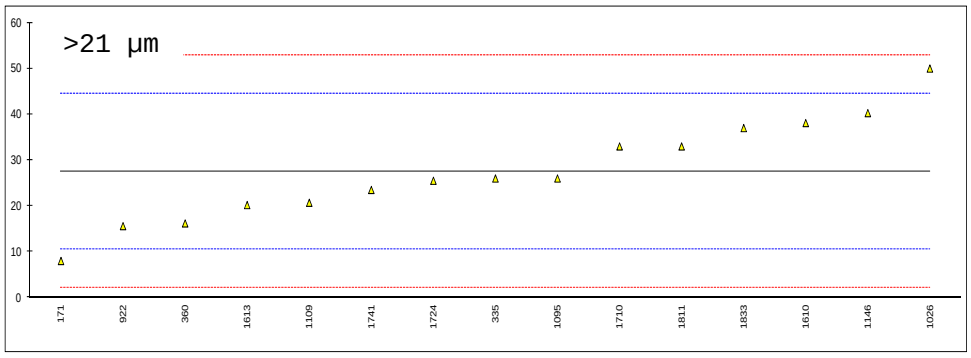
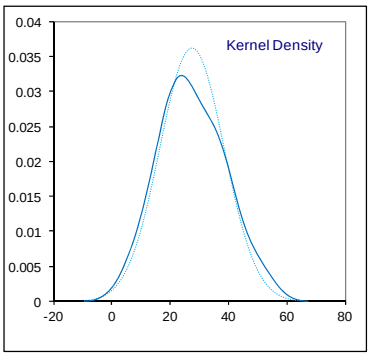
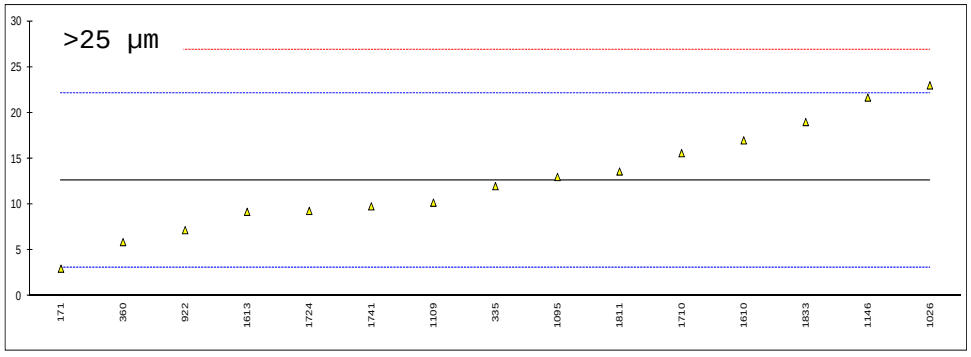
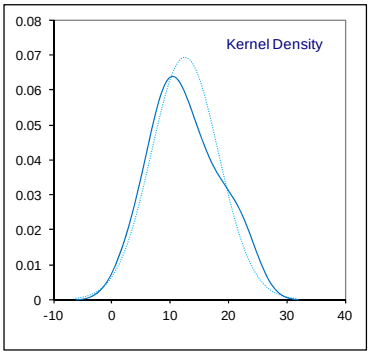
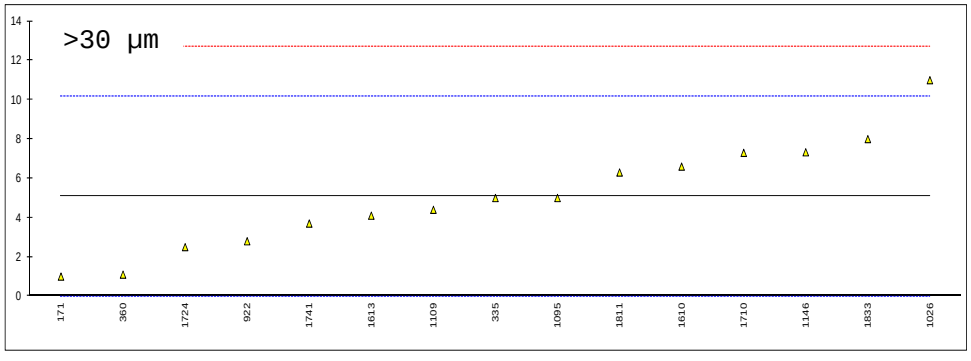
0.01
0.008
0.006
0.004
0.002
0
0 100 200 300

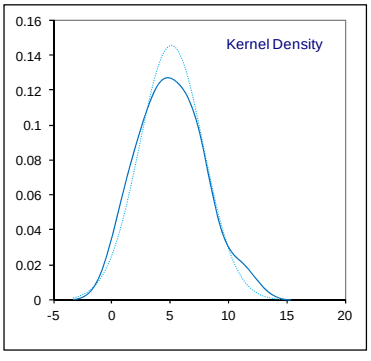

>21 µm
60
50
40
30
20
10
0
171 922 360 1613 1109 1741 1724 335 1095 1710 1811 1833 1610 1146 1026


Kernel Density
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
-20 0 20 40 60 80


>25 µm
30
25
20
15
10
5
0
171 360 922 1613 1724 1741 1109 335 1095 1811 1710 1610 1833 1146 1026


Kernel Density
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-10 0 10 20 30 40


>30 µm
14
12
10
8
6
4
2
0
171 360 1724 922 1741 1613 1109 335 1095 1811 1610 1710 1146 1833 1026


Kernel Density
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
-5 0 5 10 15 20

APPENDIX 2

z-scores distillation ASTM D86.

lab	method	IBP	10% rec.	50% rec.	90%rec.	FBP
62	D86-A	1.11	1.71	1.11	0.76	0.89
90		-----	-----	-----	-----	-----
120	D86-A	-0.75	-0.84	-0.21	-0.77	-0.84
132	D86-A	0.80	0.28	0.74	0.76	0.34
150	D86-A	0.01	-0.17	-0.49	0.07	-1.00
159	D86-A	0.39	0.43	0.64	0.15	-0.49
169	D86-A	-0.85	-0.47	-0.11	-0.31	-0.05
171	D86-A	-0.33	0.13	1.21	2.14	-0.05
175	D86-A	0.39	0.13	-0.30	0.91	-0.53
177	D86	-0.61	-0.47	-0.68	-2.22	-1.20
194	D86-A	-0.92	0.43	0.08	-0.08	0.66
225	D86-M	0.87	0.28	-0.58	-1.69	-0.96
228	D86-M	-1.53	**-3.47**	**-4.35**	-3.21	-1.36
237		-----	-----	-----	-----	-----
238		-----	-----	-----	-----	-----
253	D86-M	-0.16	-0.47	-1.53	-1.69	-0.57
258	D86-A	1.52	0.96	1.11	0.76	0.34
273	D86-A	1.07	0.58	0.45	0.22	0.02
311	D86-A	0.83	0.28	0.55	0.38	0.26
317	D86-A	0.73	0.58	0.55	0.07	1.25
335	D86-A	0.59	-0.47	0.55	0.99	-0.09
336		-----	-----	-----	-----	-----
340	D86-A	0.76	0.66	1.40	1.68	0.30
353	IP123-A	-1.02	-0.02	0.17	0.15	1.09
360	D86-A	-0.33	0.73	-0.40	-1.00	-0.09
370	D86-A	0.35	0.13	1.02	1.07	0.02
391		-----	-----	-----	-----	-----
398	D86-A	1.21	-0.24	-0.68	0.30	0.34
399		-----	-----	-----	-----	-----
445	IP123-A	-1.09	-0.17	0.08	0.45	-0.37
447		-----	-----	-----	-----	-----
463	D86-A	-0.09	0.13	0.08	0.53	0.50
473	D86-A	-0.09	0.28	0.26	0.22	0.22
495	D86-A	0.56	-0.99	-1.15	-0.62	-0.33
594	INH-2177-A	1.48	-1.37	1.30	1.68	1.13
601		-----	-----	-----	-----	-----
604	D86-A	1.21	0.36	-0.30	0.61	-0.69
606	D86-A	0.59	0.96	1.40	-0.08	0.69
631	D86-M	0.01	-2.72	-2.47	-0.92	-0.96
671		-----	-----	-----	-----	-----
824	D86-A	0.42	0.96	0.83	1.22	0.26
875	D86-A	-0.75	0.06	0.36	0.68	0.10
922	D86-M	-1.12	-1.89	-3.31	-3.12	-0.12
962		-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----
974	D86-A	0.21	-0.54	-0.68	0.30	-0.96
997	D86-M	0.35	-1.97	-0.58	-0.54	0.02
1021	D86-A	0.04	-0.17	1.58	1.98	0.93
1026	ISO3405-A	0.35	0.13	-0.11	-0.92	0.46
1039	ISO3405-A	0.49	0.73	0.08	0.15	-0.09
1049	D86-A	-0.44	0.43	0.26	0.45	0.89
1059	ISO3405-A	-0.61	-0.62	-0.30	-1.15	-0.49
1062	D86-A	0.32	0.13	0.17	-0.69	0.06
1064	D86-A	0.73	0.13	0.92	1.83	1.25
1079	D86-A	0.66	0.58	1.11	1.22	0.77
1081	D86-A	-1.33	0.13	-0.30	-2.14	-0.80
1097	ISO3405-A	0.52	0.28	1.21	1.52	0.46
1105	D86-A	-0.64	-0.17	-0.49	-0.69	-0.05
1109	D86-A	-0.44	0.06	-0.21	0.30	-0.73
1126	in house-M	0.15	0.13	2.15	0.00	0.73
1146	D86-A	-0.13	-0.47	-0.68	-1.92	-0.73
1150	ISO3405-A	1.55	-1.29	-1.71	-2.14	0.38
1161	ISO3405-A	-1.60	-1.52	0.08	-0.08	-0.13
1167	ISO3405-A	-1.19	-2.12	-0.49	-0.77	-0.13
1201	D86-A	-0.37	-1.14	-0.87	0.15	-0.69
1203	ISO3405-A	-0.09	0.88	1.40	1.29	0.30
1237		-----	-----	-----	-----	-----
1284		-----	-----	-----	-----	-----
1299	D86-A	-0.03	0.28	0.36	1.60	0.89
1318	D86-A	-0.64	0.36	-0.40	0.38	-0.25
1347	D86-M	1.55	0.28	1.30	0.61	1.40

1348	D86-A	0.28	-1.29	-1.71	0.22	-0.37
1372	D86-A	-1.05	0.96	0.08	1.37	-0.37
1373	D86-M	-1.38	-1.26	-0.02	0.15	-1.30
1423		-----	-----	-----	-----	-----
1428	D86-A	0.18	0.28	-0.40	-1.15	-0.17
1487	D86	-0.85	**-3.47**	**-3.98**	-1.76	-1.36
1496	D86-A	0.01	0.51	0.08	0.30	0.10
1531	D86-A	2.20	1.86	1.87	1.45	1.40
1538	D86-A	1.21	0.13	-0.21	-2.37	-0.88
1586	D86-A	-1.71	-0.69	-1.81	-1.30	-0.65
1587	D86-A	-0.09	0.36	0.45	-0.69	-0.53
1610	IP123-M	-2.80	-2.04	-1.81	-1.76	-2.03
1613	D86-A	0.66	2.53	1.11	-0.62	0.38
1631	D86-A	-0.88	-0.39	0.17	-0.69	0.66
1634	D86-A	-1.67	0.81	0.26	0.30	0.42
1678		-----	-----	-----	-----	-----
1710	D86-A	-0.03	0.58	1.02	1.75	0.69
1715	D86-A	0.80	0.28	-0.02	0.22	0.14
1720	D86-A	-0.33	0.36	0.26	-0.16	0.77
1724	D86-A	-1.40	-0.09	0.17	0.00	0.77
1730		-----	-----	-----	-----	-----
1741	D86-A	-1.74	-0.30	-0.49	-2.36	-0.21
1755	D86-A	-0.08	0.42	1.00	2.90	0.40
1757	D86-A	-0.30	-0.09	-0.77	0.84	-1.28
1770		-----	-----	-----	-----	-----
1776	D86-A	-0.47	-0.24	0.17	1.14	0.06
1784	D86-A	0.76	-0.09	-0.96	0.22	-0.92
1787		-----	-----	-----	-----	-----
1792	D86-A	-1.29	0.58	0.83	0.30	0.14
1794	ISO3405-A	0.52	-0.77	-1.34	-1.07	-1.28
1798	D86-A	0.80	1.33	0.36	1.07	0.62
1811	D86-A	-0.37	-1.07	-0.77	-1.69	-0.05
1833	D86-A	0.69	0.36	0.36	-0.69	0.85
1842	D86-A	-1.12	-0.09	0.17	0.53	0.81
1854	D86-A	0.63	-0.09	-1.24	-0.39	-0.84
1951	D86-A	2.07	0.88	-3.13	**-6.27**	**-3.41**
2129	D86-A	1.04	0.88	-0.02	-0.54	0.77
2130	D86-A	1.07	1.11	0.83	3.66	1.05

Z-scores underlined and bold belong to the statistical outliers acc. to Grubbs/Dixon/Rosner outlier test.

APPENDIX 3

z-scores Particle Size Distribution on sample #14017 acc. to IP564 and IP565.

	IP 564						IP565					
lab	>4 µm	>6 µm	>14 µm	>21 µm	>25 µm	>30 µm	>4 µm	>6 µm	>14 µm	>21 µm	>25 µm	>30 µm
150	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
171	-----	-----	-----	-----	-----	-----	-4.26	-3.03	-2.54	-2.31	-2.03	-1.60
225	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
253	1.27	-0.33	-1.10	0.32	0.80	1.02	-----	-----	-----	-----	-----	-----
311	1.43	0.60	-0.76	-0.83	-1.04	-0.46	-----	-----	-----	-----	-----	-----
335	-----	-----	-----	-----	-----	-----	4.58	-1.84	-0.63	-0.18	-0.13	-0.03
360	-----	-----	-----	-----	-----	-----	-1.64	-0.94	-1.15	-1.34	-1.42	-1.56
370	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
391	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
445	-0.71	-1.19	-0.37	0.48	0.86	1.27	-----	-----	-----	-----	-----	-----
495	-3.64	-3.07	-2.10	-1.20	-0.99	-0.09	-----	-----	-----	-----	-----	-----
671	0.55	1.33	0.45	-0.14	0.07	-0.21	-----	-----	-----	-----	-----	-----
922	-----	-----	-----	-----	-----	-----	1.38	-1.22	-1.98	-1.41	-1.14	-0.89
963	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
974	**50.48**	**49.33**	-0.34	-0.37	0.23	1.14	-----	-----	-----	-----	-----	-----
1026	-----	-----	-----	-----	-----	-----	4.49	4.97	3.34	2.66	2.18	2.33
1039	9.36	5.41	1.84	1.01	1.07	0.77	-----	-----	-----	-----	-----	-----
1062	7.92	4.68	3.98	3.37	3.54	3.98	-----	-----	-----	-----	-----	-----
1064	-0.33	0.16	-0.20	-0.46	-0.67	-1.08	-----	-----	-----	-----	-----	-----
1081	-1.02	-1.26	-1.01	-0.74	-0.83	-0.83	-----	-----	-----	-----	-----	-----
1095	-----	-----	-----	-----	-----	-----	-0.88	0.02	-0.18	-0.18	0.08	-0.03
1097	-1.16	-0.64	-1.28	-0.28	-0.09	0.28	-----	-----	-----	-----	-----	-----
1105	-3.95	-3.02	-2.67	-1.54	-1.51	-1.08	-----	-----	-----	-----	-----	-----
1109	-----	-----	-----	-----	-----	-----	0.78	0.31	-0.85	-0.81	-0.51	-0.27
1146	-----	-----	-----	-----	-----	-----	-3.83	-1.96	0.02	1.51	1.90	0.89
1200	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1201	-7.84	-6.27	-2.85	-1.34	-1.20	-1.32	-----	-----	-----	-----	-----	-----
1299	4.96	6.20	3.29	2.50	1.17	-0.58	-----	-----	-----	-----	-----	-----
1414	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1587	-7.23	-5.58	-2.77	-1.47	-1.46	-1.32	-----	-----	-----	-----	-----	-----
1610	-----	-----	-----	-----	-----	-----	-0.14	-0.11	0.82	1.25	0.92	0.60
1613	-----	-----	-----	-----	-----	-----	-6.35	-2.70	-0.83	-0.87	-0.72	-0.38
1631	8.15	6.26	2.83	0.87	0.65	0.28	-----	-----	-----	-----	-----	-----
1710	-----	-----	-----	-----	-----	-----	0.87	0.53	0.60	0.65	0.62	0.87
1720	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1724	-----	-----	-----	-----	-----	-----	1.53	1.21	1.29	-0.24	-0.70	-1.01
1741	-----	-----	-----	-----	-----	-----	1.79	1.23	0.14	-0.48	-0.60	-0.54
1776	-2.22	-0.38	0.97	-0.26	-0.62	-1.20	-----	-----	-----	-----	-----	-----
1784	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1798	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1811	-----	-----	-----	-----	-----	-----	0.06	1.73	0.84	0.65	0.20	0.48
1833	-----	-----	-----	-----	-----	-----	1.59	1.81	1.13	1.12	1.34	1.15
1951	-2.71	-1.82	2.93	**4.77**	**8.91**	**11.13**	-----	-----	-----	-----	-----	-----
2130	-2.83	-1.07	-0.85	0.09	0.01	-0.58	-----	-----	-----	-----	-----	-----

Z-scores underlined and bold belong to the statistical outliers acc. to Grubbs/Dixon/Rosner outlier test.

APPENDIX 4

lab	method	Brand name and model	Used flow in ml/min	remarks
150				
171	IP565	Stanhope Seta AV	30	
225	IP564	Parker Hannifin ACM20	25	
237				
253	IP564	Parker Hannifin ACM20	33	
311	IP564	Parker Hannifin ACM20	25	internal flow can not be verified by user
335	IP565	Stanhope Seta AV Count	30	
360	IP565	Stanhope Seta AV Count	30	Model: SA 1000-0
370				
391				
445	IP565	Parker Hannifin ACM 202024		Unable to obtain the fow rate in during the test, but the flow check performed before the analysis gave a rating of good .
495	IP564	Parker Hannifin ACM20	max 400 l/min	
671	IP564	Parker ACM20	15	
922				
963				
974				
1026				
1039				
1062	IP565	Stanhope AV Count	30	
1064				
1081				
1095	IP565	Stanhope Seta AV Count	30	
1097	IP564	Parker Hannifin ACM 20.2022	20	
1105				
1109	IP565	Stanhope Seta AV Count	unknown	Model: Model SA1000-0 U
1146	in house	PAMAS SBSS-C	25	
1200				
1201				
1299				
1414				
1587	IP564	Parker Hannifin ACM20	28.5	
1610	IP565	Stanhope Seta AV Count	30	
1613	IP565	Stanhope Seta AV Count	30 ± 5	
1631				
1710	IP565	Stanhope Seta AV Count	28.5	
1720				
1724	IP565	Stanhope Seta AV Count	30	Sometimes different results with the same sample. Test portion preparation is very important.
1741	IP565	Stanhope Sets AV Count	26.25	
1776	IP564	Parker Hannifin CM20	unknown	Not possible to read the flow during the test. Performing test of the flow according to instrument manual answer is good.
1784				
1798				
1811	IP565	Stanhope Seta AV Count	27.9	
1833	IP565	Stanhope Seta AV Count	30	
1951				
2130	IP564	Parker Hannifin ACM20	30	flow was set by manufaturer, flow specified in IP564 is 5-15 m/min

APPENDIX 5

Number of participants per country

1 lab in	AUSTRALIA
4 labs in	BELGIUM
4 labs in	BULGARIA
2 labs in	CANADA
1 lab in	CHINA, People's Republic
1 lab in	COTE D'IVOIRE
1 lab in	CYPRUS
1 lab in	CZECH REPUBLIC
1 lab in	DJIBOUTI
1 lab in	EGYPT
4 labs in	FRANCE
1 lab in	FRENCH GUIANA
1 lab in	GEORGIA
2 labs in	GERMANY
3 labs in	GREECE
1 lab in	GUAM
3 labs in	HUNGARY
1 lab in	IRELAND
3 labs in	ITALY
1 lab in	JORDAN
1 lab in	KOREA
2 labs in	LEBANON
1 lab in	LITHUANIA
3 labs in	MALAYSIA
1 lab in	MALTA
1 lab in	MOZAMBIQUE
9 labs in	NETHERLANDS
4 labs in	NIGERIA
2 labs in	NORWAY
1 lab in	PAKISTAN
1 lab in	PHILIPPINES
1 lab in	POLAND
3 labs in	PORTUGAL
1 lab in	QATAR
1 lab in	RUSSIAN FEDERATION
3 labs in	SAUDI ARABIA
2 labs in	SERBIA
2 labs in	SLOVENIA
1 lab in	SOUTH AFRICA
1 lab in	SOUTH KOREA
2 labs in	SPAIN
1 lab in	SUDAN
3 labs in	SWEDEN
1 lab in	TOGO
1 lab in	TUNISIA
6 labs in	TURKEY
3 labs in	UNITED ARAB EMIRATES
7 labs in	UNITED KINGDOM
9 labs in	UNITED STATES OF AMERICA

APPENDIX 6

Abbreviations:

C	= final result after checking of first reported suspect result
U	= reported in wrong unit
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 outlier test
R(0.05)	= straggler in Rosner outlier test
ex	= excluded from calculations
E	= error in calculations
n.a.	= not applicable
W	= withdrawn on request participant
fr.	= first reported
U	= reported in a deviating unit
SDS	= Safety Data Sheet

Literature:

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2	Defence Standard 91-91, Issue 7 Publication date 18 February 2011 (Note amendment 2, implementation date March 2013).
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4	ASTM E178-02
5	ASTM E1301-03
6	ISO 13528-05
7	ISO 5725, parts 1-6, 1994
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9	W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
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