Results of Proficiency Test
Gasoil B10 (10% FAME)
June 2017

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

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1 INTRODUCTION

Since 2005, the Institute for Interlaboratory Studies organizes a proficiency test for the analyses of Gasoil B10 containing 6-10% FAME, in accordance with the latest applicable version of the EN590 (0-7% FAME) and ASTM D7467 (6-20% FAME) specifications. During the annual proficiency testing program 2016/2017, it was decided to continue the round robin for the analysis of Gasoil B10.
In this interlaboratory study, a total of 72 laboratories in 33 different countries registered for participation. See appendix 2 for the number of participants per country. In this report, the results of the 2017 Gasoil B10 proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. The sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. In this proficiency test, the participants received, depending on their registration, 1 litre plus a 0.5 litre bottle Gasoil B10 (both labelled #17090) and/or a 1 litre bottle with Gasoil B10 (± 850 mL filled, labelled #17091) for Total Contamination only.
Participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

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

2.2 PROTOCOL

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

The necessary sample material of about 180 litres of regular EN590 Diesel (with a FAME concentration of approx. 5.6%V/V) was purchased at a local petrol station. To this batch 8.8 litre Biodiesel B100 was added to reach a final FAME concentration of approx. 10%V/V. From this batch, after homogenisation, 100 amber glass bottles of 1 litre and 100 amber glass bottles of 0.5 litre (both labelled #17090) were filled. The homogeneity of the subsamples of #17090 was checked by determination of Density at 15°C in accordance with ASTM D4052 on 8 stratified randomly selected samples.

	Density at 15 °C in kg/m^3
sample #17090-1	836.21
sample #17090-2	836.21
sample #17090-3	836.21
sample #17090-4	836.21
sample #17090-5	836.21
sample #17090-6	836.21
sample #17090-7	836.21
sample #17090-8	836.21

Table 1: homogeneity test results of subsamples #17090

From the above test results the repeatability was calculated and compared with 0.3 times the corresponding reproducibility of the reference test method in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density at 15 °C in kg/m^3
r (observed)	0.00
reference test method	ISO12185:96
0.3 x R (reference test method)	0.15

Table 2: evaluation of repeatability of the subsamples #17090

The calculated repeatability was less than 0.3 times the reproducibility of the corresponding reference test method. Therefore, homogeneity of the subsamples #17090 was assumed.

For the preparation of the Total Contamination PT subsamples, a different batch of approx. 50 litre regular Gasoil was used. To each bottle (labelled #17091) Arizona Dust material (fine) in an oil suspension was added to give a total contamination of approx 21 mg/kg. To do this, a defined volume of the fresh prepared and well shaken dust suspension was added to an empty bottle by means of a calibrated pipette. The addition was checked by weighing the bottle before and after addition. In total 49 bottles were prepared and subsequently filled up to 850 mL with Gasoil B10. After homogenization, a random sample was taken to verify the actual Total Contamination content (21.2 mg/kg).

To the participants, depending on their registration, a 1 litre and a 0.5 litre bottle of sample #17090 and/or a 1 litre (± 850 mL filled) of sample #17091 were sent on May 17, 2017. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of Gasoil B10, packed in the brown glass bottles, was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were requested to determine on sample #17090: Acid number (total), Aromatics by FIA, Ash Content, Cetane Indices as per D976 and ISO4264, Cloud Point, Cold Filter Plugging Point (CFPP), Carbon Residue on 10% distillation residue, Ramsbottom Carbon Residue on 10% distillation residue, Copper Corrosion, Density at 15°C, Distillation (IBP, 10%rec., 50%rec., 90%rec., 95%rec., FBP, Volume at 250°C and 350°C), FAME, Flash Point PMcc, Kinematic Viscosity at 40°C, Lubricity by HFRR at 60°C, Oxidation Stability ISO12205 and EN15751, Polycyclic Aromatic Hydrocarbons (MAH, DAH, T+AH and Total AH), Pour Point (manual and automated), Sulphur and Water.
The participants were requested to determine on sample #17091 Total Contamination only.

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

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

3 RESULTS

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

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalysis). Additional or corrected test results are used for data analysis and original test results are placed under 'Remarks' in the test result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ of March 2017 (iis-protocol, version 3.4).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as ‘<…’ or ‘>…’ were not used in the statistical evaluation.
First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either ‘unknown’, ‘OK’, ‘suspect’ or ‘not OK’. After removal of outliers, this check was repeated. If a data set does not have a normal distribution, the results of the statistical evaluation should be used with due care.
According to ISO 5725 the original test results per determination were submitted to Dixon’s, Grubbs’ and/or Rosner’s outlier tests. Outliers are marked by D(0.01) for the Dixon’s test, by G(0.01) or DG(0.01) for the Grubbs’ test and by R(0.01) for the Rosner’s test. Stragglers are marked by D(0.05) for the Dixon’s test, by G(0.05) or DG(0.05) for the Grubbs’ test and by R(0.05) for the Rosner’s test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.
For each assigned value the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirements based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.
Finally, the reproducibilities were calculated from the standard deviations by multiplying them with a factor of 2.8.

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle. Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

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

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

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

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

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

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

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

4 EVALUATION

In this proficiency test, some problems were encountered during the dispatch of the samples to the participants in Brazil and Peru. Two laboratories reported test results after the final reporting date and four laboratories did not report any test results at all. Not all laboratories were able to perform all analyses requested. Finally, 68 laboratories did report 1444 numerical test results. Observed were 33 outlying test results, which is 2.3%. In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.

Not all original data sets proved to have a normal Gaussian distribution. These are referred to as “not OK” or “suspect”. The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section, the reported test results are discussed per sample and per test. The test methods, which are used by the various laboratories, are taken into account for explaining the observed differences when possible and applicable. These methods are also in the tables together with the reported test results. The abbreviations, used in these tables, are listed in appendix 3.

In the iis PT reports, ASTM methods are referred to with a number (e.g. D976) and an added designation for the year that the method was adopted or revised (e.g. D976:06). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D976:06 (2016)). In the test results tables of appendix 1 only the method number and year of adoption or revision (e.g. D976:06) will be used.

Acid number: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D664-B:11a (2017).

Aromatics (FIA): No significant conclusions were drawn as the precision and bias of ASTM D1319 with biodiesel blends is not known and is currently under investigation, see paragraph X1.11.1 of ASTM D7467:17.

Ash: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ISO6245:01.

C.I. D976: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D976:06(2016).

C.I. ISO4264: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ISO4264:07.

Cloud Point: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of EN23015:94.

CFPP: This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of EN116:15.

CR on 10% res.: The consensus value of the group was below the application range (0.1% - 30% M/M) of ISO10370:14. Therefore, no significant conclusions were drawn.

Ramsbottom CR: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D524:15.

Copper Corr.: No problems were observed. All reporting participants agreed on a test result of 1 or 1A/1B.

Density at 15°C: 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 ISO12185:96.

Distillation: This determination was not problematic. In total six statistical outliers were observed over eight parameters. However, the calculated reproducibilities after rejection of the statistical outliers are all in (full) agreement with the requirements of ISO3405:11 (automated) for all parameters.

FAME: This determination was problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of EN14078-B:14.

Flash Point: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ISO2719-A:16, D93-A:16a and EN590-Annex A:13.

Kin. Visc. 40°C: This determination was problematic for a number of laboratories. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ISO3104:94+corr.1997 and with EN590:13, Annex A.

Lubricity by HFRR: This determination was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of ISO12156-1:16 (for visual and digital camera).

Ox. Stab. ISO12205: 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 ISO12205:95.

Ox. Stab. EN15751: This determination was very problematic. No statistical outliers were observed. The calculated reproducibility is not at all in agreement with the requirements of EN15751:14.

PAH: 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 EN12916:16.

MAH: 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 EN12916:16.

DAH: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of EN12916:16.

T+AH: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of EN12916:16.

Total AH: This determination was not problematic. No statistical outliers were observed, but three test results were excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of EN12916:16.

Pour Point (M): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ISO3016:94.

Pour Point (A): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D5950:14.

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 ISO20846:11 and ASTM D5453:16e1.

Water: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of EN12937:00.

Total Contamination: The samples were spiked with a freshly prepared suspension of Arizona Dust (fine). Therefore, the minimum Total Contamination to be found was known. The laboratories should be able to find at least 13.2 mg/kg [21.2 $mg/kg_{(added\ amount)}$ – 8.0 $mg/kg_{(R\ EN12662)}$]. Three of the laboratories reported a test result below this minimum concentration of 10.1 mg/kg. These test results were also marked as statistical outliers. This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in full agreement with the requirements of EN12662:14.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of participating laboratories. The assigned values, calculated reproducibilities and reproducibilities, derived from literature reference test methods (in casu ASTM, ISO, EN reference test methods) are compared in the next table.

Parameters	*unit*	*n*	*average*	*2.8 * sd*	*R (lit)*
Acid Number (total)	mgKOH/g	31	0.039	0.041	0.048
Aromatics by FIA	%V/V	13	21.3	10.2	n.a.
Ash content	%M/M	16	0.0009	0.0012	0.005
Cetane Index D976		33	54.9	0.6	2
Cetane Index ISO4264		43	54.5	0.8	2
Cloud Point	°C	50	-2.9	2.4	4
Cold Filter Plugging Point (CFPP)	°C	51	-13.8	2.5	3.8
CR micro method on 10% residue	%M/M	22	0.023	0.034	(0.020)
Ramsbottom CR on 10% residue	%M/M	8	0.070	0.018	0.031
Copper Corrosion 3hrs at 50°C	rating	47	1	n.a.	n.a.
Density at 15°C	kg/m^3	63	836.2	0.4	0.5
Initial Boiling Point	°C	62	165.7	9.1	9.1
10% recovery	°C	59	207.9	4.6	4.6
50% recovery	°C	62	282.4	3.0	3.0
90% recovery	°C	62	338.5	3.9	5.1
95% recovery	°C	64	352.3	6.5	9.0
Final Boiling Point	°C	61	361.0	5.7	7.1
Volume at 250°C	%V/V	56	29.0	1.6	2.7
Volume at 350°C	%V/V	57	94.4	1.6	2.7
Fatty Acid Methyl Ester (FAME)	%V/V	47	9.7	0.9	0.7
Flash Point PMcc	°C	62	61.9	3.8	4.4
Kinematic Viscosity at 40°C	mm^2/s	52	2.918	0.023	0.032
Lubricity by HFRR at 60°C	µm	29	216	85	90
Oxidation Stability ISO12205	g/m^3	12	2.47	4.56	7.47

Parameters	*unit*	*n*	*average*	*2.8 * sd*	*R (lit)*
Oxidation Stability EN15751	hours	27	16.5	6.9	3.5
Polycyclic Aromatic Hydrocarbons	%M/M	25	1.79	0.70	0.80
Mono-Aromatic Hydrocarbons	%M/M	21	17.8	2.3	2.9
Di-Aromatic Hydrocarbons	%M/M	24	1.64	0.64	0.68
Tri+-Aromatic Hydrocarbons	%M/M	21	0.17	0.28	0.54
Total Aromatic Hydrocarbons	%M/M	21	19.7	2.9	4.5
Pour Point (manual)	°C	26	-13.5	6.0	6.6
Pour Point (automated)	°C	28	-11.9	4.2	6.1
Sulphur	mg/kg	55	7.7	1.8	2.0
Water content	mg/kg	56	74.9	30.8	59.5
Total Contamination (#17091)	mg/kg	30	23.8	8.3	8.0

Table 3: summary of test results samples #17090 and #17091

Between brackets: evaluation with care as consensus value was below application range of the reference test method

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

4.3 COMPARISON OF THE INTERLABORATORY STUDY OF JUNE 2017 WITH PREVIOUS PTS.

	June 2017	*June 2016*	*May 2015*	*May 2014*	*April 2013*
Number of reporting labs	68	76	73	67	61
Number of results reported	1444	1522	1371	1317	1257
Statistical outliers	33	51	32	33	29
Percentage outliers	2.3%	3.4%	2.3%	2.5%	2.4%

Table 4: comparison with previous proficiency tests.

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

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

	June 2017	*June 2016*	*May 2015*	*May 2014*	*April 2013*
Acid number (total)	+	++	+	+	+
Aromatics by FIA	n.e.	n.e.	n.e.	n.e.	n.e.
Ash content	++	++	+	++	+
Cetane Index D976	++	++	++	++	++
Cetane Index ISO4264	++	n.e.	n.e.	n.e.	n.e.
Cloud Point	++	++	+	++	++
Cold Filter Plugging Point	+	++	+	+	--
CR micro method on 10% res.	(--)	(--)	(-)	(-)	(-)
Ramsbottom CR on 10% res.	++	+	+/-	n.e.	(--)
Density at 15°C	+	++	+	+	+
Distillation	+	-	+	+	+
Fatty Acid Methyl Ester (FAME)	-	+/-	-	-	-
Flash Point PMcc	+	+	+	+	+
Kinematic Viscosity at 40°C	+	+	+/-	+	+/-
Lubricity by HFRR at 60°C	+/-	+	-	++	++

	June 2017	*June 2016*	*May 2015*	*May 2014*	*April 2013*
Oxidation Stability ISO12205	+	-	+	+	+/-
Oxidation Stability EN15751	--	+	-	+/-	--
Poly Aromatic Hydrocarbons	+	-	+	-	+
Pour Point (manual)	+/-	+	+	--	+/-
Pour Point (automated)	+	++	-	+	+
Sulphur	+	+	+	+/-	++
Water content	++	++	++	++	++
Total Contamination	+/-	+	--	--	--

Table 5: comparison determinations against the reference test method

Between brackets: consensus value is below application range of the reference test method

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

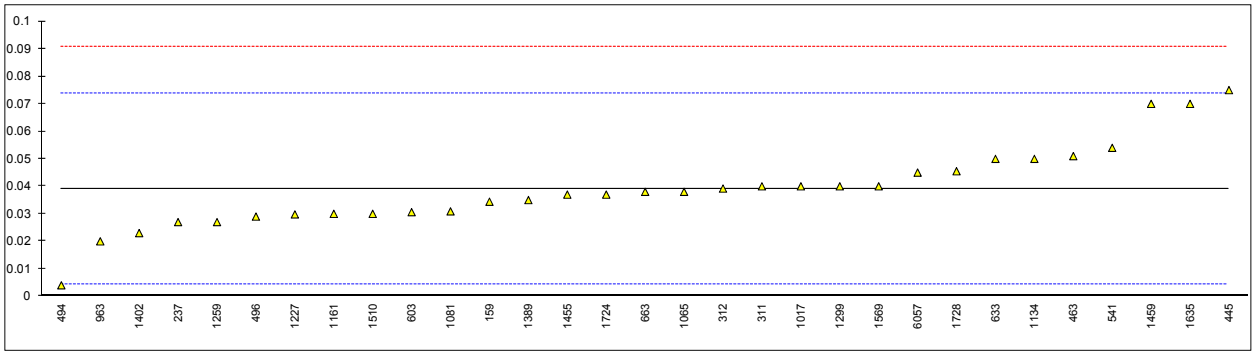
++: group performed much better than the reference test method
+ : group performed better than the reference test method
+/-: group performance equals the reference test method
- : group performed worse than the reference test method
-- : group performed much worse than the reference test method
n.e.: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

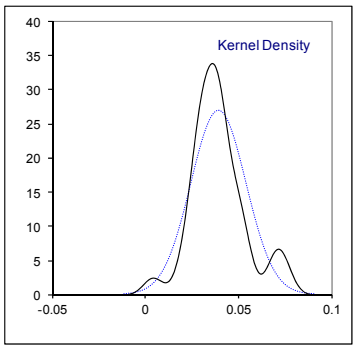
APPENDIX 1

Determination of Acid Number on sample #17090; result in mgKOH/g

lab	method	value	mark	z(targ)	remarks
62	D664-A	<0.1		-----	
120		-----		-----	
150	D664-A	<0.10	C	-----	first reported: 0.14
159	D664-A	0.03441		-0.27	
171	D664-A	<0.10		-----	
175		-----		-----	
194	D664-A	<0.10		-----	
237	D974	0.027		-0.70	
238		-----		-----	
311	D974	0.04		0.06	
312	D974	0.0392		0.01	
323	D664-A	<0.1		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	IP177	0.075		2.08	
447	D664-A	<0.05		-----	
463	D664-A	0.051		0.69	
494	D664-A	0.004		-2.03	
496	D664-A	0.029		-0.58	
511		-----		-----	
529		-----		-----	
541	D974	0.054		0.87	
556		-----		-----	
603	D664-A	0.0306		-0.49	
621		-----		-----	
633	D664-A	0.05		0.63	
663	D664-A	0.038		-0.06	
963	D664-A	0.02		-1.10	
1016		-----		-----	
1017	D664-A	0.04		0.06	
1033		-----		-----	
1059	ISO6619	<0,05		-----	
1065	D664-A	0.038		-0.06	
1081	D664-A	0.0309		-0.47	
1134	D664-A	0.05		0.63	
1146		-----		-----	
1161	D664-A	0.03		-0.52	
1194		-----		-----	
1227	D974	0.0298		-0.54	
1259	D664-A	0.027		-0.70	
1299	D664-A	0.040		0.06	
1389	D664-A	0.035		-0.23	
1397		-----		-----	
1402	D664-A	0.023		-0.93	
1455	D974	0.037		-0.12	
1459	D664-A	0.07		1.79	
1510	D974	0.03		-0.52	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569	D664-A	0.04		0.06	
1631		-----		-----	
1634		-----		-----	
1635	D664-A	0.07		1.79	
1667		-----		-----	
1706		-----		-----	
1724	D664-A	0.037		-0.12	
1728	D974	0.0455		0.37	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	D664-A	0.045		0.34	

normality	suspect
n	31
outliers	0
mean (n)	0.0390
st.dev. (n)	0.01480
R(calc.)	0.0414
R(D664-B:11a)	0.0484



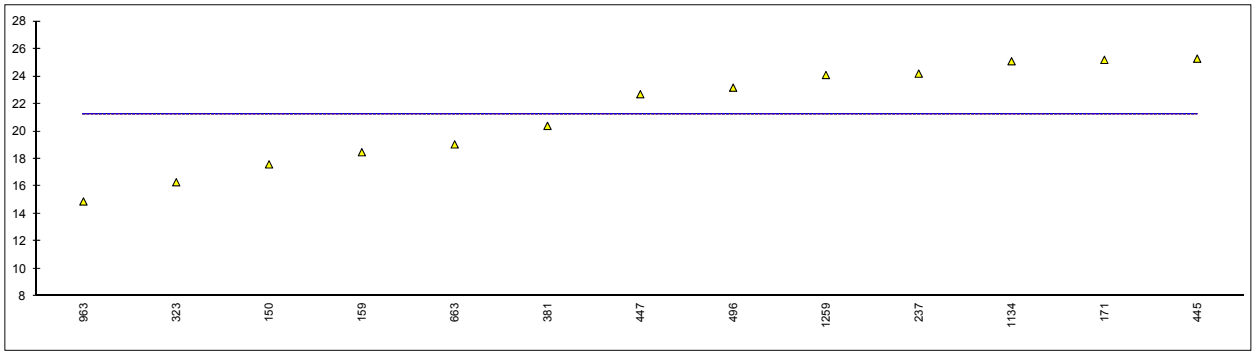


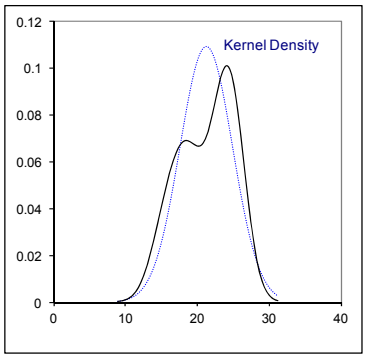
Determination of Aromatics by FIA on sample #17090; result in %V/V

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	D1319	17.6		-----	
159	D1319	18.48		-----	
171	D1319	25.2		-----	
175		-----		-----	
194		-----		-----	
237	D1319	24.2		-----	
238		-----		-----	
311		-----		-----	
312		-----		-----	
323	D1319	16.3		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381	EN15553	20.4		-----	
444		-----		-----	
445	IP156	25.29		-----	
447	D1319	22.7		-----	
463		-----		-----	
494		-----		-----	
496	D1319	23.18		-----	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663	D1319	19.05		-----	
963	D1319	14.9		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1134	D1319	25.1		-----	
1146		-----		-----	
1161		-----		-----	
1194		-----		-----	
1227		-----		-----	
1259	EN15553	24.1		-----	
1299		-----		-----	
1389		-----		-----	
1397		-----		-----	
1402		-----		-----	
1455		-----		-----	
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635		-----		-----	
1667		-----		-----	
1706		-----		-----	
1724		-----		-----	
1728		-----		-----	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057		-----		-----	

normality	OK
n	13
outliers	0
mean (n)	21.269
st.dev. (n)	3.6603
R(calc.)	10.249
R(D1319:15)	unknown

Compare R(D1319:15) for Gasoil without FAME = 3.7



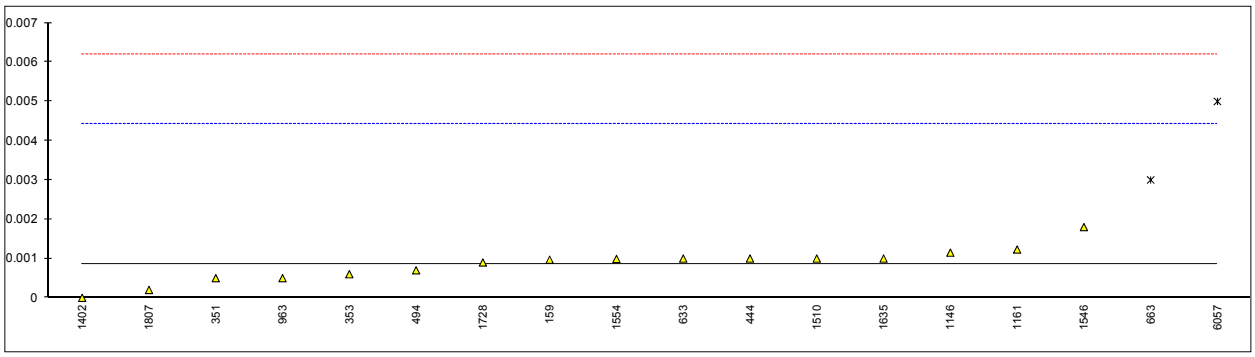


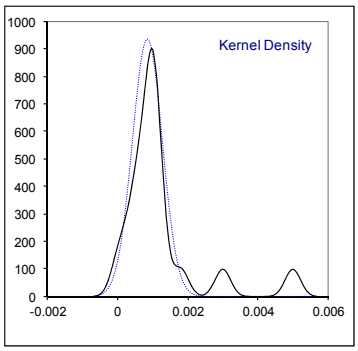
Determination of Ash Content on sample #17090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62	D482	<0.1		-----	
120		-----		-----	
150	ISO6245	<0.001		-----	
159	D482	0.00097		0.07	
171	D482	<0.001		-----	
175		-----		-----	
194	D482	<0.001		-----	
237	D482	<0.001		-----	
238		-----		-----	
311		-----		-----	
312		-----		-----	
323	ISO6245	<0.001		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351	ISO6245	0.0005		-0.19	
353	IP4	0.0006		-0.14	
381		-----		-----	
444	D482	0.0010		0.09	
445	IP4	<0.001		-----	
447	D482	<0.001		-----	
463	ISO6245	<0,001		-----	
494	ISO6245	0.0007		-0.08	
496	ISO6245	<0.001		-----	
511		-----		-----	
529		-----		-----	
541	ISO6245	<0.001		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633	D482	0.0010		0.09	
663	D482	0.003	G(0.01)	1.21	
963	ISO6245	0.0005		-0.19	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1134		-----		-----	
1146	D482	0.00115		0.17	
1161	ISO6245	0.00123		0.21	
1194		-----		-----	
1227		-----		-----	
1259		-----		-----	
1299	D482	<0.001		-----	
1389	D482	<0.001		-----	
1397	ISO6245	<0,001		-----	
1402	ISO6245	0.000		-0.47	
1455	D482	<0.001		-----	
1459		-----		-----	
1510	IP4	0.001		0.09	
1546	ISO6245	0.0018		0.53	
1549		-----		-----	
1550		-----		-----	
1554	ISO6245	0.00099		0.08	
1569	ISO6245	<0.001		-----	
1631		-----		-----	
1634		-----		-----	
1635	ISO6245	0.001		0.09	
1667		-----		-----	
1706		-----		-----	
1724	D482	<0,001		-----	
1728	D482	0.0009		0.03	
1807	ISO6245	0.0002		-0.36	
1810		-----		-----	
1811		-----		-----	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	ISO6245	0.005	G(0.01)	2.33	

normality	suspect
n	16
outliers	2
mean (n)	0.00085
st.dev. (n)	0.000427
R(calc.)	0.00120
R(ISO6245:01)	0.005

Application range: 0.001 – 0.180%
Compare R(D482:13)=0.005

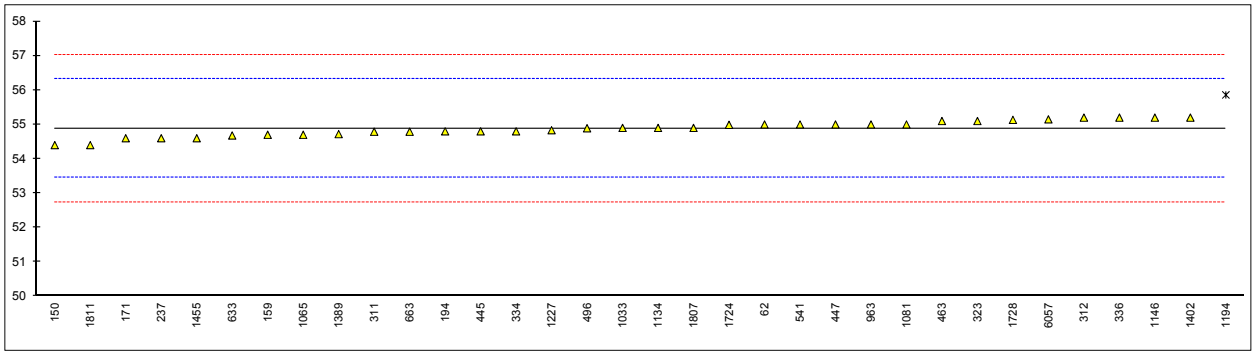


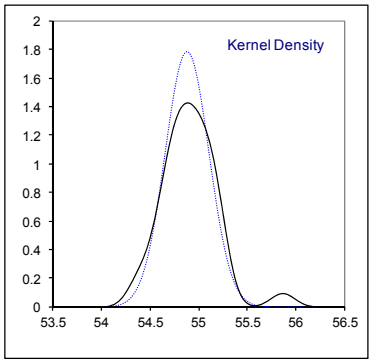


Determination of Cetane Index, two variables D976 on sample #17090

lab	method	value	mark	z(targ)	remarks
62	D976	55.0		0.17	
120		-----		-----	
150	D976	54.4		-0.67	
159	D976	54.7	E	-0.25	iis calculated: 55.01
171	D976	54.6	E	-0.39	iis calculated: 55.03
175		-----		-----	
194	D976	54.8		-0.11	
237	D976	54.6		-0.39	
238		-----		-----	
311	D976	54.79		-0.13	
312	D976	55.2		0.45	
323	D976	55.1		0.31	
334	D976	54.8		-0.11	
335		-----		-----	
336	D976	55.2		0.45	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	D976	54.8		-0.11	
447	D976	55.0		0.17	
463	D976	55.1		0.31	
494		-----		-----	
496	D976	54.89		0.01	
511		-----		-----	
529		-----		-----	
541	D976	55.0		0.17	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633	D976	54.68		-0.28	
663	D976	54.79		-0.13	
963	D976	55.0		0.17	
1016		-----		-----	
1017		-----		-----	
1033	D976	54.9		0.03	
1059		-----		-----	
1065	D976	54.7	E	-0.25	iis calculated: 54.94
1081	D976	55.0		0.17	
1134	D976	54.9		0.03	
1146	D976	55.2		0.45	
1161		-----		-----	
1194	INH-4737	55.86	R(0.01), E	1.37	iis calculated: 54.70 (ASTM D976); 53.82 (ASTM D4737-A)
1227	D976	54.833	E	-0.07	iis calculated: 55.28
1259		-----		-----	
1299		-----		-----	
1389	D976	54.72		-0.23	
1397		-----		-----	
1402	D976	55.2		0.45	
1455	D976	54.6	E	-0.39	iis calculated: 54.79
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635		-----		-----	
1667		-----		-----	
1706		-----		-----	
1724	D976	54.99		0.15	
1728	D976	55.1346		0.35	
1807	D976	54.9		0.03	
1810		-----		-----	
1811	D976	54.4	E	-0.67	iis calculated: 54.90
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	D976	55.15		0.38	

normality	OK
n	33
outliers	1
mean (n)	54.881
st.dev. (n)	0.2232
R(calc.)	0.625
R(D976:06)	2

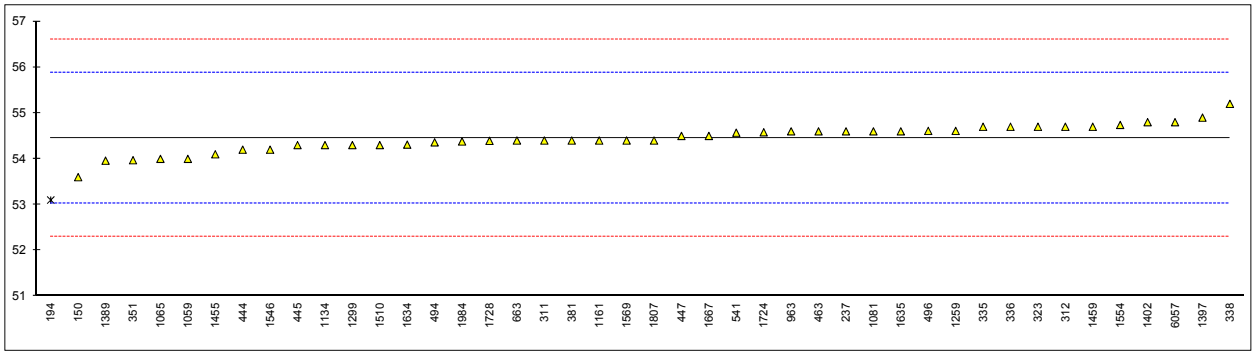


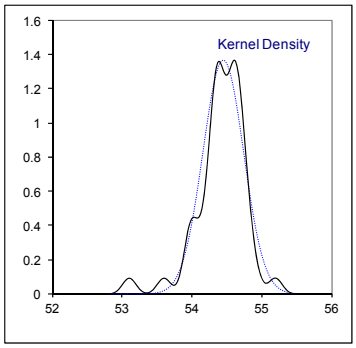


Determination of Cetane Index, four variables ISO4264 on sample #17090

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	D4737	53.6		-1.19	
159		-----		-----	
171		-----		-----	
175		-----		-----	
194	D4737	53.1	R(0.01)	-1.89	
237	D4737	54.6	E	0.21	iis calculated: 53.77 (ASTM D4737, method A)
238		-----		-----	
311	ISO4264	54.4		-0.07	
312	D4737	54.7		0.35	
323	ISO4264	54.7		0.35	
334		-----		-----	
335	ISO4264	54.7		0.35	
336	ISO4264	54.7		0.35	
338	ISO4264	55.2		1.05	
351	ISO4264	53.97		-0.67	
353		-----		-----	
381	ISO4264	54.4		-0.07	
444	ISO4264	54.2		-0.35	
445	IP380	54.3		-0.21	
447	D4737	54.5		0.07	
463	D4737	54.6		0.21	
494	ISO4264	54.36		-0.13	
496	ISO4264	54.61		0.22	
511		-----		-----	
529		-----		-----	
541	D4737	54.57		0.17	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663	D4737	54.40		-0.07	
963	ISO4264	54.6		0.21	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	ISO4264	54.0		-0.63	
1065	ISO4264	54.0	E	-0.63	iis calculated: 54.51 (ISO4264)
1081	ISO4264	54.6		0.21	
1134	D4737	54.3		-0.21	
1146		-----		-----	
1161	ISO4264	54.4		-0.07	
1194		-----		-----	
1227		-----		-----	
1259	ISO4264	54.61		0.22	
1299	D4737	54.3		-0.21	
1389	D4737	53.96		-0.69	
1397	ISO4264	54.9		0.63	
1402	IP380	54.8		0.49	
1455	ISO4264	54.1		-0.49	
1459	D4737	54.7		0.35	
1510	IP380	54.3		-0.21	
1546	ISO4264	54.2		-0.35	
1549		-----		-----	
1550		-----		-----	
1554	ISO4264	54.74	E	0.40	iis calculated: 54.33 (ISO4264)
1569	ISO4264	54.4		-0.07	
1631		-----		-----	
1634	ISO4264	54.31		-0.20	
1635	ISO4264	54.6		0.21	
1667	ISO4264	54.5		0.07	
1706		-----		-----	
1724	ISO4264	54.58		0.18	
1728	ISO4264	54.3929		-0.08	
1807	ISO4264	54.4		-0.07	
1810		-----		-----	
1811		-----		-----	
1984	ISO4264	54.3795		-0.10	
1987		-----		-----	
6016		-----		-----	
6057	ISO4264	54.8		0.49	

normality	suspect
n	43
outliers	1
mean (n)	54.451
st.dev. (n)	0.2925
R(calc.)	0.819
R(ISO4264:07)	2



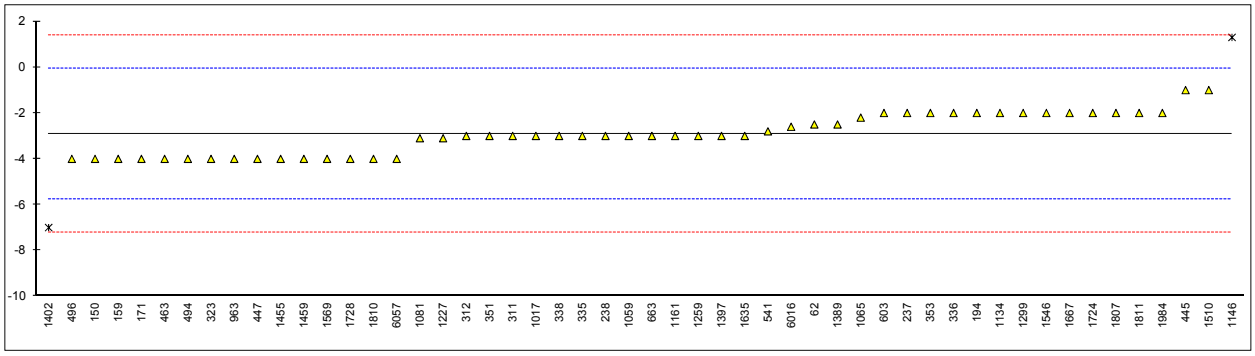


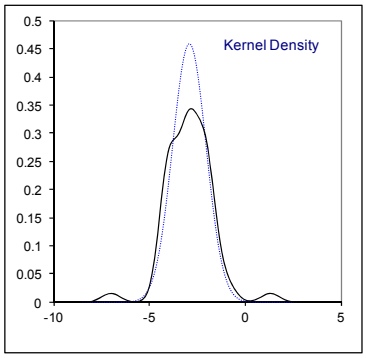
Determination of Cloud Point on sample #17090; result in °C

lab	method	value	mark	z(targ)	remarks
62	D5773	-2.5		0.29	
120		-----		-----	
150	D2500	-4		-0.76	
159	D2500	-4.0		-0.76	
171	D2500	-4		-0.76	
175		-----		-----	
194	D2500	-2		0.64	
237	D2500	-2		0.64	
238	D2500	-3		-0.06	
311	EN23015	-3		-0.06	
312	EN23015	-3		-0.06	
323	EN23015	-4		-0.76	
334		-----		-----	
335	EN23015	-3		-0.06	
336	EN23015	-2		0.64	
338	EN23015	-3.0		-0.06	
351	D7683 *)	-3		-0.06	*) ASTM D 2500 in accordance with ASTM D 7683
353	IP219	-2		0.64	
381		-----		-----	
444		-----		-----	
445	IP219	-1		1.34	
447	D2500	-4		-0.76	
463	D2500	-4.0		-0.76	
494	EN23015	-4		-0.76	
496	EN23015	-4.0		-0.76	
511		-----		-----	
529		-----		-----	
541	D5771	-2.8		0.08	
556		-----		-----	
603	D2500	-2		0.64	
621		-----		-----	
633		-----		-----	
663	D2500	-3		-0.06	
963	EN23015	-4		-0.76	
1016		-----		-----	
1017	D2500	-3		-0.06	
1033		-----		-----	
1059	EN23015	-3		-0.06	
1065	D5771	-2.2		0.50	
1081	D5771	-3.1		-0.13	
1134	IP219	-2		0.64	
1146	D2500	1.3	R(0.01)	2.95	
1161	D7683	-3		-0.06	
1194		-----		-----	
1227	D2500	-3.1		-0.13	
1259	EN23015	-3		-0.06	
1299	D2500	-2		0.64	
1389	D2500	-2.5		0.29	
1397	EN23015	-3		-0.06	
1402	EN23015	-7	R(0.01)	-2.86	
1455	D5771	-4		-0.76	
1459	ISO3015	-4.0		-0.76	
1510	D2500	-1		1.34	
1546	EN23015	-2		0.64	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569	EN23015	-4		-0.76	
1631		-----		-----	
1634		-----		-----	
1635	EN23015	-3		-0.06	
1667	EN23015	-2		0.64	
1706		-----		-----	
1724	D2500	-2		0.64	
1728	D2500	-4.0		-0.76	
1807	EN23015	-2		0.64	
1810	EN23015	-4		-0.76	
1811	EN23015	-2		0.64	
1984	EN23015	-2		0.64	
1987		-----		-----	
6016	D2500	-2.6		0.22	
6057	EN23015	-4		-0.76	

normality	OK
n	50
outliers	2
mean (n)	-2.92
st.dev. (n)	0.869
R(calc.)	2.43
R(EN23015:94)	4

Compare R(D2500:17)=4

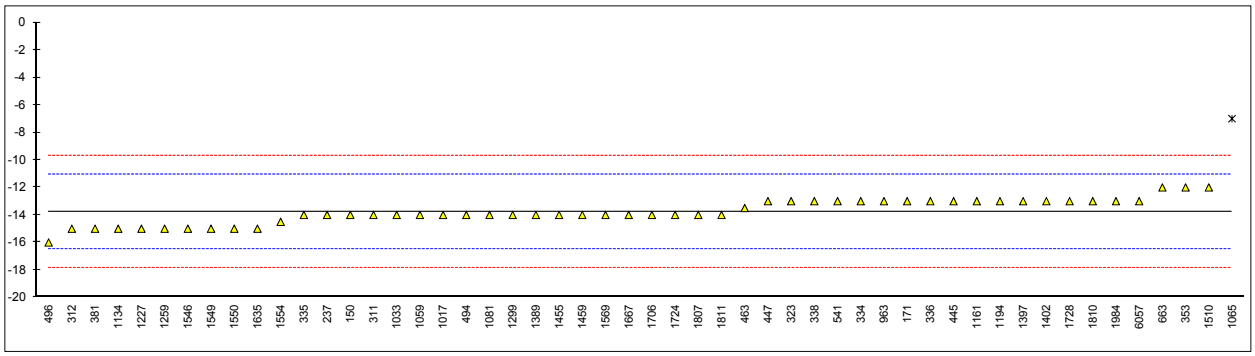


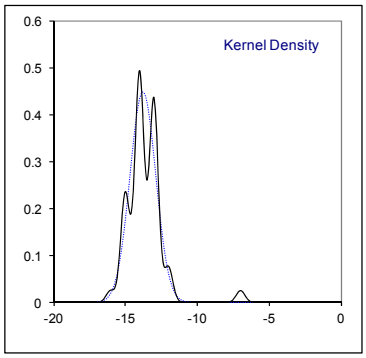


Determination of Cold Filter Plugging Point (CFPP) on sample #17090; result in °C

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	EN116	-14		-0.17	
159		-----		-----	
171	D6371	-13		0.56	
175		-----		-----	
194		-----		-----	
237	D6371	-14		-0.17	
238		-----		-----	
311	EN116	-14		-0.17	
312	EN116	-15		-0.90	
323	EN116	-13		0.56	
334	EN116	-13		0.56	
335	EN116	-14		-0.17	
336	EN116	-13		0.56	
338	EN116	-13.0		0.56	
351		-----		-----	
353	IP309	-12		1.29	
381	EN116	-15		-0.90	
444		-----		-----	
445	IP309	-13		0.56	
447	IP309	-13		0.56	
463	EN116	-13.5		0.19	
494	EN116	-14		-0.17	
496	EN116	-16.0		-1.64	
511		-----		-----	
529		-----		-----	
541	EN116	-13		0.56	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663	EN116	-12		1.29	
963	EN116	-13		0.56	
1016		-----		-----	
1017	EN116	-14		-0.17	
1033	IP309	-14		-0.17	
1059	EN116	-14		-0.17	
1065	D6371	-7.0	R(0.01)	4.95	
1081	EN116	-14		-0.17	
1134	EN116	-15		-0.90	
1146		-----		-----	
1161	EN116	-13		0.56	
1194	EN116	-13		0.56	
1227	EN116	-15		-0.90	
1259	EN116	-15		-0.90	
1299	EN116	-14		-0.17	
1389	IP309	-14		-0.17	
1397	EN116	-13		0.56	
1402	EN116	-13		0.56	
1455	EN116	-14		-0.17	
1459	EN116	-14.0		-0.17	
1510	IP309	-12	C	1.29	first reported: -19
1546	EN116	-15		-0.90	
1549	EN116	-15		-0.90	
1550	EN116	-15		-0.90	
1554	EN116	-14.5		-0.54	
1569	EN116	-14		-0.17	
1631		-----		-----	
1634		-----		-----	
1635	EN116	-15		-0.90	
1667	EN116	-14		-0.17	
1706	EN116	-14		-0.17	
1724	IP309	-14		-0.17	
1728	D6371	-13.0		0.56	
1807	EN116	-14		-0.17	
1810	EN116	-13		0.56	
1811	EN116	-14		-0.17	
1984	EN116	-13		0.56	
1987		-----		-----	
6016		-----		-----	
6057	EN116	-13		0.56	

normality	OK
n	51
outliers	1
mean (n)	-13.76
st.dev. (n)	0.891
R(calc.)	2.49
R(EN116:15)	3.83





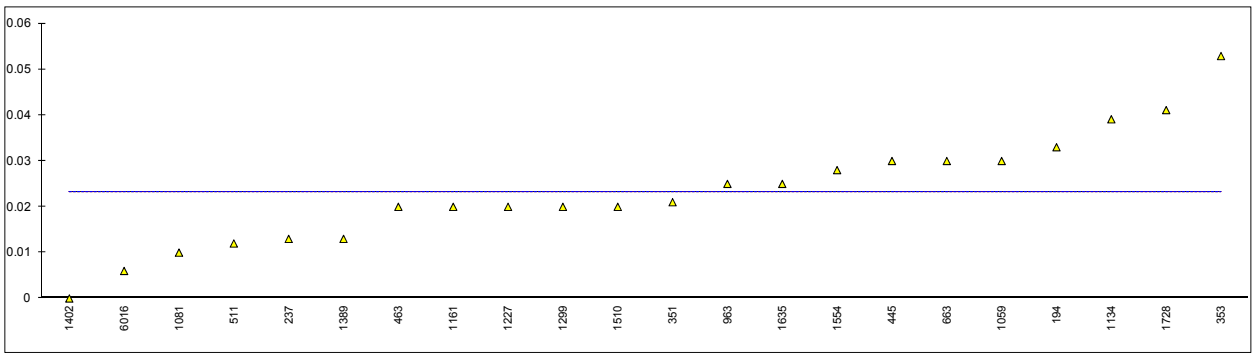
Determination of Carbon Residue, micro method on 10% dist. res. on sample #17090; result in %M/M

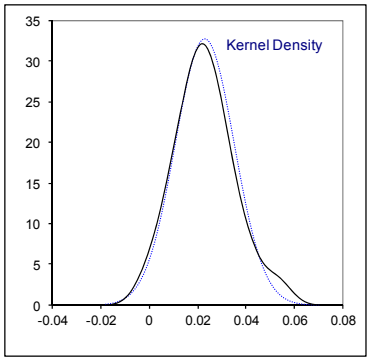
lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150		-----		-----	
159		-----		-----	
171	D4530	<0.1		-----	
175		-----		-----	
194	D4530	0.033		-----	
237	D4530	0.013		-----	
238		-----		-----	
311		-----		-----	
312		-----		-----	
323	ISO10370	<0.10		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351	ISO10370	0.021		-----	
353	IP13	0.0529		-----	
381		-----		-----	
444		-----		-----	
445	IP398	0.03		-----	
447	IP398	<0.10		-----	
463	ISO10370	0.020		-----	
494		-----		-----	
496		-----		-----	
511	D189	0.012		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663	D4530	0.03		-----	
963	ISO10370	0.025		-----	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	ISO10370	0.03		-----	
1065		-----		-----	
1081	ISO10370	0.01		-----	
1134	IP398	0.0391		-----	
1146		-----		-----	
1161	D4530	0.02		-----	
1194		-----		-----	
1227	D4530	0.020		-----	
1259		-----		-----	
1299	D4530	0.02		-----	
1389	D4530	0.013		-----	
1397		-----		-----	
1402	ISO10370	0.00		-----	
1455	D4530	<0.1		-----	
1459		-----		-----	
1510	D4530	0.02		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		0.028		-----	
1569	ISO10370	<0.10		-----	
1631		-----		-----	
1634		-----		-----	
1635	ISO10370	0.025		-----	
1667		-----		-----	
1706		-----		-----	
1724	D4530	<0,1		-----	
1728	ISO10370	0.0411		-----	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1984		-----		-----	
1987		-----		-----	
6016	D4530	0.006		-----	
6057	ISO10370	<0,10		-----	

normality	OK
n	22
outliers	0
mean (n)	0.0231
st.dev. (n)	0.01218
R(calc.)	0.0341
R(ISO10370:14)	(0.0199)

Application range: 0.1 – 30 %M/M

Compare R(EN590:13-Annex A)= 0.0322

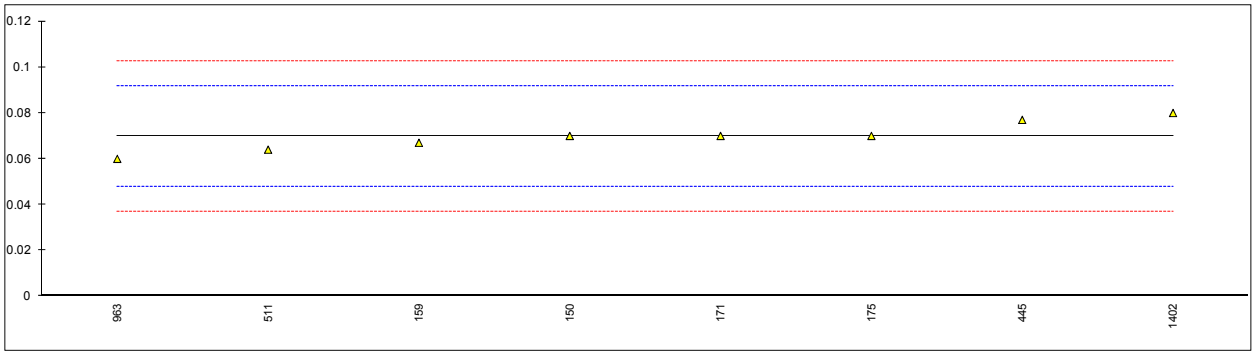


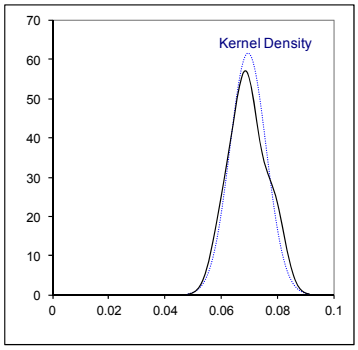


Determination of Ramsbottom Carbon Res. on 10% dist. res. on sample #17090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	D524	0.07		0.02	
159	D524	0.067		-0.25	
171	D524	0.07		0.02	
175	D524	0.07		0.02	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
312		-----		-----	
323		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	IP14	0.077		0.66	
447		-----		-----	
463		-----		-----	
494		-----		-----	
496		-----		-----	
511	D524	0.064		-0.52	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	D524	0.06		-0.89	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161		-----		-----	
1194		-----		-----	
1227		-----		-----	
1259		-----		-----	
1299		-----		-----	
1389		-----		-----	
1397		-----		-----	
1402	D524	0.08		0.93	
1455		-----		-----	
1459		-----		-----	
1510		-----		-----	
1546	ISO6615	< 0.10		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635		-----		-----	
1667		-----		-----	
1706		-----		-----	
1724		-----		-----	
1728		-----		-----	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057		-----		-----	

normality	unknown
n	8
outliers	0
mean (n)	0.0697
st.dev. (n)	0.00648
R(calc.)	0.0181
R(D524:15)	0.0308





Determination of Copper Strip 3hrs at 50 °C on sample #17090

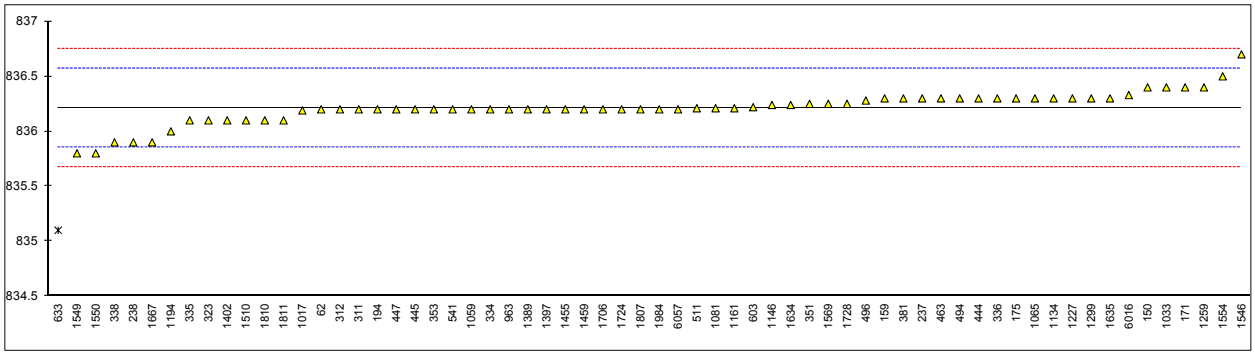
lab	method	value	mark	z(targ)	remarks
62	D130	1a		-----	
120		-----		-----	
150	D130	1a		-----	
159	D130	1a		-----	
171	D130	1a		-----	
175	D130	1a		-----	
194	D130	1A		-----	
237	D130	1		-----	
238	D130	1A		-----	
311	ISO2160	1A		-----	
312		-----		-----	
323	ISO2160	1A		-----	
334		-----		-----	
335	D130	1b		-----	
336	D130	1		-----	
338		-----		-----	
351	ISO2160	1a		-----	
353	IP154	1a		-----	
381		-----		-----	
444		-----		-----	
445	IP154	1a		-----	
447	D130	1a		-----	
463	ISO2160	1A		-----	
494	ISO2160	1a		-----	
496	D130	1a		-----	
511	D130	1A		-----	
529		-----		-----	
541	D130	1a		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633	D130	1a		-----	
663	D130	1a		-----	
963	ISO2160	1a		-----	
1016		-----		-----	
1017	D130	1A		-----	
1033	IP154	1b		-----	
1059	ISO2160	1a		-----	
1065		-----		-----	
1081	D130	1b		-----	
1134	D130	1a		-----	
1146		-----		-----	
1161	ISO2160	1a		-----	
1194		-----		-----	
1227	D130	1A		-----	
1259	ISO2160	1A		-----	
1299	D130	1A		-----	
1389	D130	1A		-----	
1397	ISO2160	1		-----	
1402	D130	1a		-----	
1455	D130	1A		-----	
1459		-----		-----	
1510	D130	1A		-----	
1546	ISO2160	1a		-----	
1549		-----		-----	
1550		-----		-----	
1554	ISO2160	1A		-----	
1569	ISO2160	1a		-----	
1631		-----		-----	
1634	ISO2160	1a		-----	
1635	ISO2160	1A		-----	
1667		-----		-----	
1706		-----		-----	
1724	D130	1a		-----	
1728	D130	1a		-----	
1807	D130	1A		-----	
1810		-----		-----	
1811		-----		-----	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	ISO2160	1A		-----	

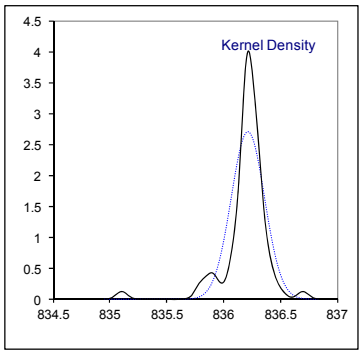
normality	n.a.
n	47
outliers	0
mean (n)	1 (1A/1B)
st.dev. (n)	n.a.
R(calc.)	n.a.
R(lit.)	n.a.

Determination of Density at 15 °C on sample #17090; result in kg/m^3

lab	method	value	mark	z(targ)	remarks
62	D4052	836.2		-0.08	
120		-----		-----	
150	ISO12185	836.4		1.04	
159	D4052	836.3		0.48	
171	D4052	836.4		1.04	
175	D4052	836.3		0.48	
194	D4052	836.2		-0.08	
237	D4052	836.3		0.48	
238	D4052	835.9		-1.76	
311	ISO12185	836.2		-0.08	
312	ISO12185	836.2		-0.08	
323	ISO12185	836.1		-0.64	
334	ISO12185	836.2		-0.08	
335	ISO12185	836.1		-0.64	
336	ISO12185	836.3		0.48	
338	ISO12185	835.9		-1.76	
351	ISO12185	836.25		0.20	
353	IP365	836.2		-0.08	
381	ISO12185	836.3		0.48	
444	D4052	836.3		0.48	
445	IP365	836.2		-0.08	
447	D4052	836.2		-0.08	
463	D4052	836.30		0.48	
494	ISO12185	836.3		0.48	
496	ISO12185	836.28		0.37	
511	D4052	836.21		-0.02	
529		-----		-----	
541	ISO12185	836.2		-0.08	
556		-----		-----	
603	D4052	836.22		0.03	
621		-----		-----	
633	D4052	835.1	R(0.01)	-6.24	
663		-----		-----	
963	ISO12185	836.2		-0.08	
1016		-----		-----	
1017	ISO12185	836.19		-0.13	
1033	IP365	836.4		1.04	
1059	ISO12185	836.2		-0.08	
1065	D4052	836.3		0.48	
1081	D4052	836.21		-0.02	
1134	IP365	836.3		0.48	
1146	D4052	836.24		0.15	
1161	ISO12185	836.21		-0.02	
1194	INH-12185	836.0		-1.20	
1227	D4052	836.3	C	0.48	first reported: 0.8363 kg/m^3
1259	ISO12185	836.4		1.04	
1299	D4052	836.3		0.48	
1389	D4052	836.2		-0.08	
1397	ISO12185	836.2		-0.08	
1402	IP365	836.1		-0.64	
1455	ISO12185	836.2		-0.08	
1459	ISO12185	836.2		-0.08	
1510	IP365	836.1		-0.64	
1546	ISO12185	836.7		2.72	
1549	ISO12185	835.8	C	-2.32	first reported: 835.6
1550	ISO12185	835.8		-2.32	
1554	ISO3675	836.5	C	1.60	first reported: 835.6
1569	ISO12185	836.25		0.20	
1631		-----		-----	
1634	ISO12185	836.24		0.15	
1635	ISO12185	836.3		0.48	
1667	ISO3675	835.9		-1.76	
1706	ISO12185	836.2		-0.08	
1724	D4052	836.2		-0.08	
1728	D4052	836.25		0.20	
1807	ISO12185	836.2		-0.08	
1810	ISO12185	836.1		-0.64	
1811	ISO12185	836.1		-0.64	
1984	ISO12185	836.2		-0.08	
1987		-----		-----	
6016	D4052	836.33		0.65	
6057	ISO12185	836.2		-0.08	

normality	not OK
n	63
outliers	1
mean (n)	836.214
st.dev. (n)	0.1472
R(calc.)	0.412
R(ISO12185:96)	0.5



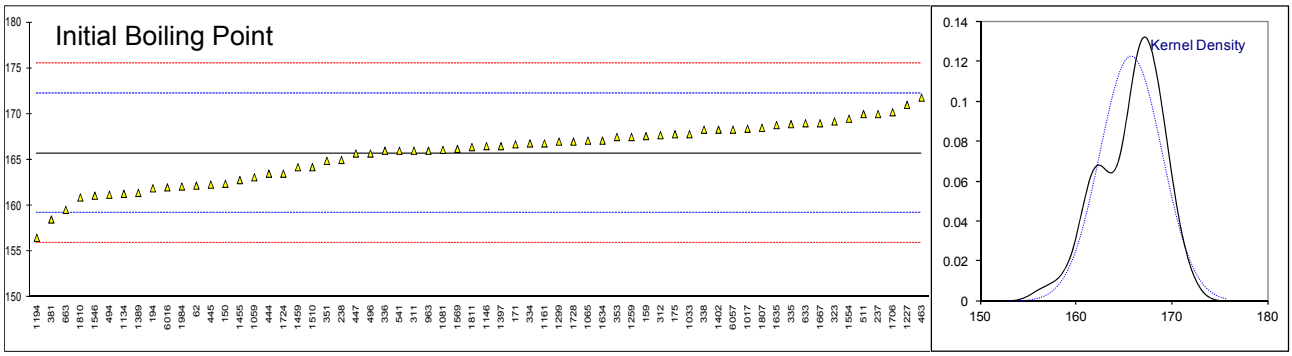


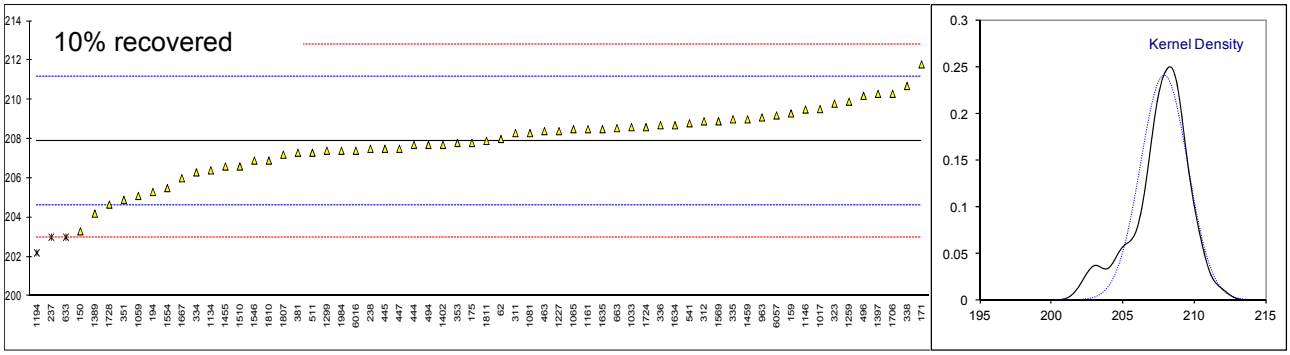
Determination of Distillation on sample #17090; result in °C

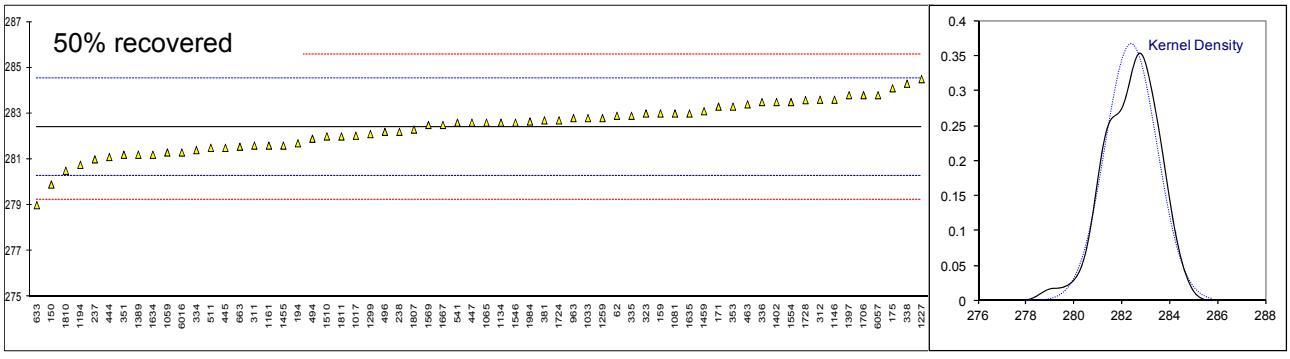
lab	method	IBP	mark	10%rec	mark	50%rec	mark	90%rec	mark	95%rec	mark	FBP	mark
62	D86-A	162.2		208.0		282.9		339.6		355		363.4	
120		-----		-----		-----		-----		-----		-----	
150	ISO3405-A	162.4		203.3		279.9		336.9		350.3		359.1	
159	D86-A	167.6		209.3		283.0		338.6		352.6		361.7	
171	D86-A	166.7	C	211.8	C	283.3	C	339.4	C	353.3	C	359.4	C
175	D86-A	167.8		207.8		284.1		341.6		357.6		360.8	
194	D86-A	161.9		205.3		281.7		337.6		351.5		360.9	
237	D86-M	170.0		203.0	C,R(0.05)	281.0		335.0		347.0		362.0	
238	D86-M	165		207.5		282.2		339.0		354.0		361.5	
311	D86-A	166.0		208.3		281.6		337.7		351.6		359.5	
312	D86-A	167.7		208.9		283.6		339.0		353.2		361.9	
323	ISO3405-A	169.2		209.8		283.0		338.2		352.4		361.1	
334	D86-A	166.8		206.3		281.4		338.1		351.9		363.3	
335	ISO3405-A	168.9		209.0		282.9		339.6		354.8		364.3	
336	ISO3405-A	166.0		208.7		283.5		341.4		357.7		362.6	
338	ISO3405-A	168.3		210.7		284.3		340.3		355.3		363.6	
351	ISO3405-A	164.90		204.90		281.20		339.00		353.50		362.50	
353	D86-A	167.5		207.8		283.3		341.1		357.8		363.8	
381	D86-A	158.5		207.3		282.7		337.8		351.7		360.5	
444	D86-A	163.5		207.7		281.1		336.1		347.4		359.0	
445	IP123-A	162.3		207.5		281.5	C	337.9		351.9		357.8	
447	D86-A	165.7		207.5		282.6		338.6		352.9		362.3	
463	ISO3405-A	171.8		208.4		283.4		339.9		354.2		365.3	
494	D86-A	161.2		207.7		281.9		338.1		353.1		361.9	
496	D86-A	165.7		210.2		282.2		337.5		350.8		360.6	
511	D86-M	170.0		207.3		281.5		338.5		352.3		361.0	
529		-----		-----		-----		-----		-----		-----	
541	ISO3405-A	166.0		208.8		282.6		338.0		351.6		361.8	
556		-----		-----		-----		-----		-----		-----	
603		-----		-----		-----		-----		-----		-----	
621		-----		-----		-----		-----		-----		-----	
633	D86-M	169		203	R(0.05)	279		335		349		358	
663	D86-A	159.55		208.55		281.55		337.05		350.50		359.60	
963	ISO3405-A	166.0		209.1		282.8		338.3		352.5		361.7	
1016		-----		-----		-----		-----		-----		-----	
1017	ISO3405-A	168.40		209.52		282.03		337.23		348.89		360.38	
1033	IP123-A	167.8		208.6		282.8		338.6		352.4		362.1	
1059	ISO3405-A	163.1		205.1		281.3		336.5		349.1		359.0	
1065		167.1		208.5		282.6		339.3		351.7		355.4	
1081	D86-A	166.1		208.3		283.0		339.2		352.7		363.3	
1134	D86-A	161.3		206.4		282.6		339.9		354.3		361	
1146	D86-A	166.5		209.5		283.6		339.5		353.5		362.5	
1161	D86-A	166.8		208.5		281.6		337.4		349.4		356.5	
1194	D86-A	156.5		202.2	R(0.01)	280.76		339.6		353.1		356.4	
1227	D86-A	171		208.4		284.5		341.1		357.8		363.2	
1259	D86-A	167.5		209.9		282.8		337.4		349.2		362.3	
1299	D86-A	167.0		207.4		282.1		338.4		352.1		360.6	
1389	D86-A	161.4		204.2		281.2		338.3		353.1		358.9	
1397	ISO3405-A	166.5		210.3		283.8		338.7		353.4		362.9	
1402	ISO3405-A	168.3		207.7		283.5		339.6		353.5		362.3	
1455	D86-A	162.8		206.6		281.6		337.8		350.6		361.0	
1459	ISO3405-A	164.2		209.0		283.1		338.1		351.7		360.1	
1510	D86-A	164.2		206.6		282.0		337.8		351.7		361.6	
1546	D86-A	161.1		206.9		282.6		338.3		352.3		360.15	
1549	D7345	-----		-----		-----		-----		354.0		-----	
1550	D7345	-----		-----		-----		-----		351.5		-----	
1554	ISO3405-M	169.5		205.5		283.5		339.5		352.5		357.5	
1569	D86-A	166.2		208.9		282.5		337.5		349.8		359.4	
1631		-----		-----		-----		-----		-----		-----	
1634	ISO3405-A	167.1		208.7		281.2		336.4		349.9		361.2	
1635	D86-A	168.8		208.5		283.0		339.7		355.7		361.5	
1667	ISO3405-M	169.0		206.0		282.5		339.0		353.0		361.0	
1706	ISO3405-A	170.2		210.3		283.8		339.4		353.1		362.0	
1724	D86-A	163.5		208.6		282.7		338.3		352.5		361.8	
1728	ISO3405-M	167.0		204.66		283.58		339.38		350.64		360.5	
1807		168.5		207.2		282.3		337.7		350.3		362.6	
1810	ISO3405-M	160.9		206.9		280.5		336.2		348.2		356.7	
1811	ISO3405-A	166.4		207.9		282.0		338.1		351.3		360.4	
1984	ISO3405-A	162.10		207.40		282.65		339.00		353.50		361.60	
1987		-----		-----		-----		-----		-----		-----	
6016	D86-A	162.0		207.4		281.3		337.3		351.1		-----	
6057	ISO3405-A	168.3		209.2		283.8		340.4		354.9		363.8	

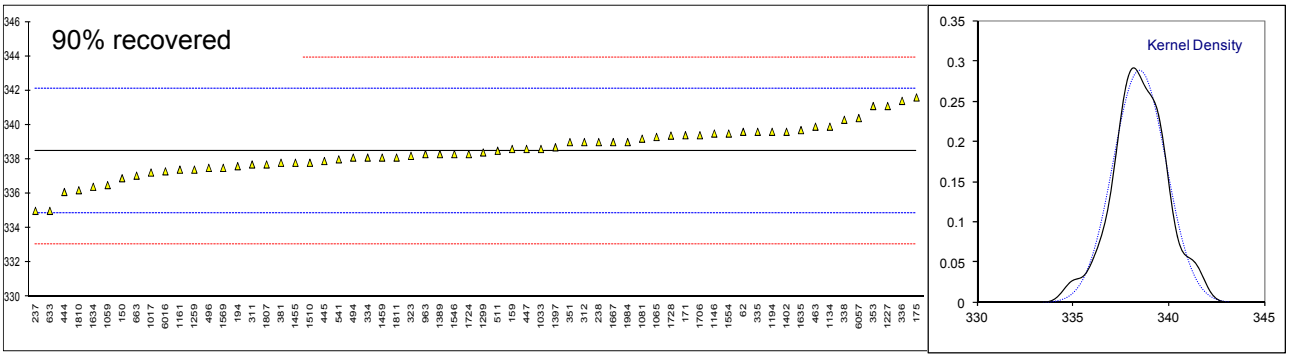
	IBP	10%rec	50%rec	90%rec	95%rec	FBP
normality	OK	OK	OK	OK	OK	OK
n	62	59	62	62	64	61
outliers	0	3	0	0	0	0
mean (n)	165.73	207.90	282.40	338.48	352.34	360.99
st.dev. (n)	3.252	1.654	1.085	1.382	2.329	2.045
R(calc.)	9.11	4.63	3.04	3.87	6.52	5.73
R(ISO3405-A:11)	9.12	4.57	2.97	5.08	8.98	7.1
Compare R(ISO3405-M:11)	6.72	4.90	3.97	3.87	4.79	3.83

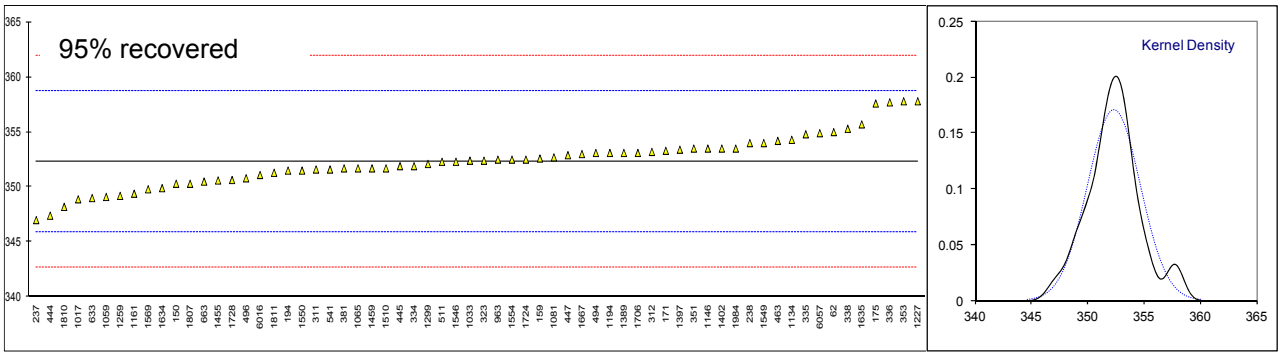
A= automated and M=manual
Lab 171 first reported: 332.1; 383.9; 413.2; 455.4; 488.1; 516.1 respectively
Lab 237 first reported: 213.0 for 10%rec.
Lab 445 first reported: 231.5 for 50%rec.

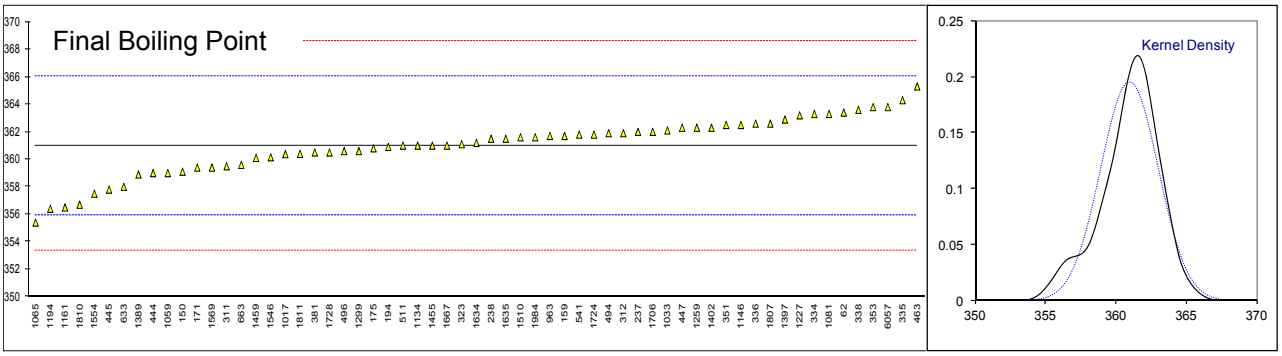







90% recovered
Kernel Density


95% recovered
Kernel Density


Final Boiling Point
Kernel Density

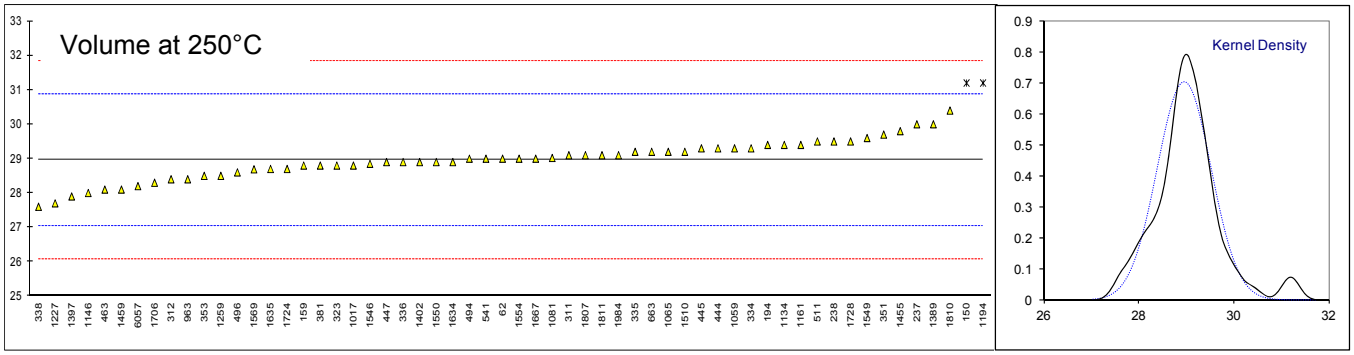
z-scores Distillation

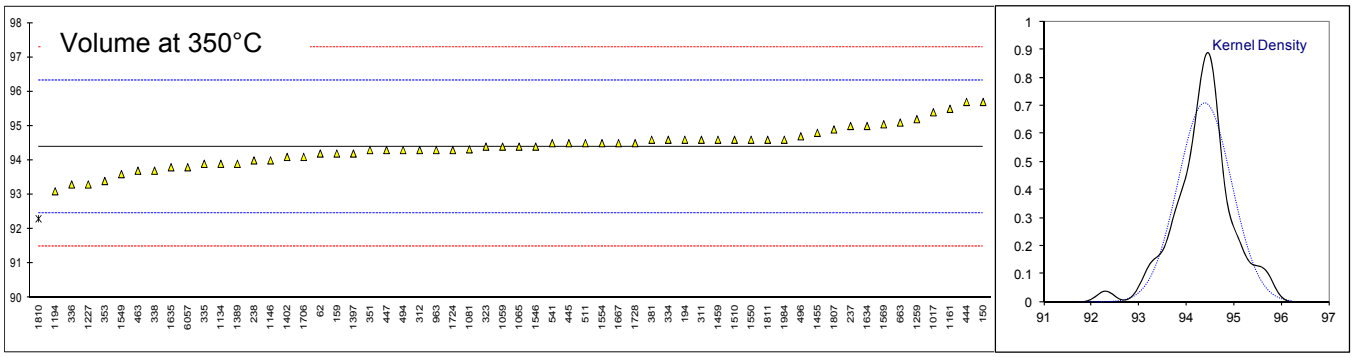
lab	method	IBP	10% rec	50% rec	90% rec	95% rec	FBP
62	D86-A	-1.08	0.06	0.47	0.62	0.83	0.95
120		-----	-----	-----	-----	-----	-----
150	ISO3405-A	-1.02	-2.82	-2.35	-0.87	-0.64	-0.75
159	D86-A	0.57	0.86	0.57	0.07	0.08	0.28
171	D86-A	0.30	2.39	0.85	0.51	0.30	-0.63
175	D86-A	0.64	-0.06	1.61	1.72	1.64	-0.08
194	D86-A	-1.18	-1.59	-0.66	-0.48	-0.26	-0.04
237	D86-M	1.31	-3.00	-1.32	-1.92	-1.67	0.40
238	D86-M	-0.22	-0.24	-0.19	0.29	0.52	0.20
311	D86-A	0.08	0.25	-0.75	-0.43	-0.23	-0.59
312	D86-A	0.61	0.61	1.13	0.29	0.27	0.36
323	ISO3405-A	1.07	1.16	0.57	-0.15	0.02	0.04
334	D86-A	0.33	-0.98	-0.94	-0.21	-0.14	0.91
335	ISO3405-A	0.97	0.67	0.47	0.62	0.77	1.30
336	ISO3405-A	0.08	0.49	1.04	1.61	1.67	0.63
338	ISO3405-A	0.79	1.71	1.79	1.01	0.92	1.03
351	ISO3405-A	-0.25	-1.84	-1.13	0.29	0.36	0.59
353	D86-A	0.54	-0.06	0.85	1.45	1.70	1.11
381	D86-A	-2.22	-0.37	0.29	-0.37	-0.20	-0.19
444	D86-A	-0.68	-0.12	-1.22	-1.31	-1.54	-0.79
445	IP123-A	-1.05	-0.24	-0.84	-0.32	-0.14	-1.26
447	D86-A	-0.01	-0.24	0.19	0.07	0.17	0.52
463	ISO3405-A	1.86	0.31	0.95	0.79	0.58	1.70
494	D86-A	-1.39	-0.12	-0.47	-0.21	0.24	0.36
496	D86-A	-0.01	1.41	-0.19	-0.54	-0.48	-0.15
511	D86-M	1.31	-0.37	-0.84	0.01	-0.01	0.00
529		-----	-----	-----	-----	-----	-----
541	ISO3405-A	0.08	0.55	0.19	-0.26	-0.23	0.32
556		-----	-----	-----	-----	-----	-----
603		-----	-----	-----	-----	-----	-----
621		-----	-----	-----	-----	-----	-----
633	D86-M	1.00	-3.00	-3.20	-1.92	-1.04	-1.18
663	D86-A	-1.90	0.40	-0.80	-0.79	-0.57	-0.55
963	ISO3405-A	0.08	0.74	0.38	-0.10	0.05	0.28
1016		-----	-----	-----	-----	-----	-----
1017	ISO3405-A	0.82	0.99	-0.35	-0.69	-1.08	-0.24
1033	IP123-A	0.64	0.43	0.38	0.07	0.02	0.44
1059	ISO3405-A	-0.81	-1.71	-1.03	-1.09	-1.01	-0.79
1065		0.42	0.37	0.19	0.45	-0.20	-2.21
1081	D86-A	0.11	0.25	0.57	0.40	0.11	0.91
1134	D86-A	-1.36	-0.92	0.19	0.79	0.61	0.00
1146	D86-A	0.24	0.98	1.13	0.57	0.36	0.59
1161	D86-A	0.33	0.37	-0.75	-0.59	-0.92	-1.77
1194	D86-A	-2.84	-3.49	-1.54	0.62	0.24	-1.81
1227	D86-A	1.62	0.31	1.98	1.45	1.70	0.87
1259	D86-A	0.54	1.23	0.38	-0.59	-0.98	0.52
1299	D86-A	0.39	-0.31	-0.28	-0.04	-0.08	-0.15
1389	D86-A	-1.33	-2.26	-1.13	-0.10	0.24	-0.83
1397	ISO3405-A	0.24	1.47	1.32	0.12	0.33	0.75
1402	ISO3405-A	0.79	-0.12	1.04	0.62	0.36	0.52
1455	D86-A	-0.90	-0.80	-0.75	-0.37	-0.54	0.00
1459	ISO3405-A	-0.47	0.67	0.66	-0.21	-0.20	-0.35
1510	D86-A	-0.47	-0.80	-0.37	-0.37	-0.20	0.24
1546	D86-A	-1.42	-0.61	0.19	-0.10	-0.01	-0.33
1549	D7345	-----	-----	-----	-----	0.52	-----
1550	D7345	-----	-----	-----	-----	-0.26	-----
1554	ISO3405-M	1.16	-1.47	1.04	0.57	0.05	-1.38
1569	D86-A	0.14	0.61	0.10	-0.54	-0.79	-0.63
1631		-----	-----	-----	-----	-----	-----
1634	ISO3405-A	0.42	0.49	-1.13	-1.14	-0.76	0.08
1635	D86-A	0.94	0.37	0.57	0.68	1.05	0.20
1667	ISO3405-M	1.00	-1.16	0.10	0.29	0.21	0.00
1706	ISO3405-A	1.37	1.47	1.32	0.51	0.24	0.40
1724	D86-A	-0.68	0.43	0.29	-0.10	0.05	0.32
1728	ISO3405-M	0.39	-1.98	1.12	0.50	-0.53	-0.19
1807		0.85	-0.43	-0.09	-0.43	-0.64	0.63
1810	ISO3405-M	-1.48	-0.61	-1.79	-1.25	-1.29	-1.69
1811	ISO3405-A	0.21	0.00	-0.37	-0.21	-0.32	-0.23
1984	ISO3405-A	-1.12	-0.31	0.24	0.29	0.36	0.24
1987		-----	-----	-----	-----	-----	-----
6016	D86-A	-1.15	-0.31	-1.03	-0.65	-0.39	-----
6057	ISO3405-A	0.79	0.80	1.32	1.06	0.80	1.11

Determination of Distillation on sample #17090; result in %V/V

Lab	method	Vol at 250°C	mark	z(targ)	Vol at 350°C	mark	z(targ)	% residue	mark
62	D86-A	29.0		0.05	94.2		-0.20	1.0	
120		-----		-----	-----		-----	-----	
150	ISO3405-A	31.2	R(0.05)	2.33	95.7		1.36	1.1	
159	D86-A	28.8		-0.16	94.2		-0.20	1.0	
171	D86-A	-----		-----	-----		-----	1.3	
175	D86-A	-----		-----	-----		-----	1.4	
194	D86-A	29.4		0.46	94.6		0.22	1.7	
237	D86-M	30.0		1.08	95.0		0.63	1.0	
238	D86-M	29.5		0.56	94.0		-0.41	1.5	
311	D86-A	29.1		0.15	94.6		0.22	1.4	
312	D86-A	28.4		-0.58	94.3		-0.10	1.7	
323	ISO3405-A	28.8		-0.16	94.4		0.01	0.4	
334	D86-A	29.3		0.36	94.6		0.22	1.3	
335	ISO3405-A	29.2		0.25	93.9		-0.51	1.1	
336	ISO3405-A	28.9		-0.06	93.3		-1.13	1.5	
338	ISO3405-A	27.6		-1.41	93.7		-0.72	1.4	
351	ISO3405-A	29.70		0.77	94.30		-0.10	0.60	
353	D86-A	28.5		-0.47	93.4		-1.03	1.0	
381	D86-A	28.8		-0.16	94.6		0.22	1	
444	D86-A	29.3		0.36	95.7		1.36	1.4	
445	IP123-A	29.3		0.36	94.5		0.11	1.8	
447	D86-A	28.9		-0.06	94.3		-0.10	1.4	
463	ISO3405-A	28.1		-0.89	93.7		-0.72	1.6	
494	D86-A	29.0		0.05	94.3		-0.10	2.1	
496	D86-A	28.6		-0.37	94.7		0.32	1.6	
511	D86-M	29.5		0.56	94.5		0.11	1.5	
529		-----		-----	-----		-----	-----	
541	ISO3405-A	29.0		0.05	94.5		0.11	1.4	
556		-----		-----	-----		-----	-----	
603		-----		-----	-----		-----	-----	
621		-----		-----	-----		-----	-----	
633	D86-M	-----		-----	-----		-----	1.0	
663	D86-A	29.20		0.25	95.10		0.73	2.05	
963	ISO3405-A	28.4		-0.58	94.3		-0.10	1.4	
1016		-----		-----	-----		-----	-----	
1017	ISO3405-A	28.8		-0.16	95.4		1.04	1.1	
1033	IP123-A	-----		-----	-----		-----	1.4	
1059	ISO3405-A	29.3		0.36	94.4		0.01	1.4	
1065		29.2		0.25	94.4		0.01	2.3	
1081	D86-A	29.02		0.07	94.32		-0.08	1.0	
1134	D86-A	29.4		0.46	93.9		-0.51	2.4	
1146	D86-A	28		-0.99	94		-0.41	1.0	
1161	D86-A	29.4		0.46	95.5		1.15	1.0	
1194	D86-A	31.2	R(0.05)	2.33	93.1		-1.34	1.8	
1227	D86-A	27.7		-1.30	93.3		-1.13	1	
1259	D86-A	28.5		-0.47	95.2		0.84	1.3	
1299	D86-A	-----		-----	-----		-----	1.4	
1389	D86-A	30.0		1.08	93.9		-0.51	1.4	
1397	ISO3405-A	27.9		-1.10	94.2		-0.20	1.2	
1402	ISO3405-A	28.9		-0.06	94.1		-0.30	1.0	
1455	D86-A	29.8		0.87	94.8		0.42	1.4	
1459	ISO3405-A	28.1		-0.89	94.6		0.22	1.4	
1510	D86-A	29.2		0.25	94.6		0.22	1.3	
1546	D86-A	28.85		-0.11	94.4		0.01	1.4	
1549	D7345	29.6		0.67	93.6		-0.82	-----	
1550	D7345	28.9		-0.06	94.6		0.22	-----	
1554	ISO3405-M	29.0		0.05	94.5		0.11	-----	
1569	D86-A	28.69		-0.28	95.05		0.68	1.4	
1631		-----		-----	-----		-----	-----	
1634	ISO3405-A	28.9		-0.06	95.0		0.63	1.4	
1635	D86-A	28.7		-0.27	93.8		-0.61	-----	
1667	ISO3405-M	29.0		0.05	94.5		0.11	1.3	
1706	ISO3405-A	28.3		-0.68	94.1		-0.30	1.8	
1724	D86-A	28.7		-0.27	94.3		-0.10	1.4	
1728	ISO3405-M	29.5		0.56	94.5		0.11	1.5	
1807		29.1		0.15	94.9		0.53	1.2	
1810	ISO3405-M	30.4		1.50	92.3	R(0.05)	-2.17	-----	
1811	ISO3405-A	29.1		0.15	94.6		0.22	1.5	
1984	ISO3405-A	29.10		0.15	94.60		0.22	1.4	
1987		-----		-----	-----		-----	-----	
6016	D86-A	-----		-----	-----		-----	1.4	
6057	ISO3405-A	28.2		-0.78	93.8		-0.61	1.5	

	Vol at 250°C	Vol at 350°C
normality	OK	OK
n	56	57
outliers	2	1
mean (n)	28.96	94.39
st.dev. (n)	0.566	0.562
R(calc.)	1.59	1.57
R(ISO3405-A:11)	2.7	2.7
Compare R(ISO3405-M:11)	5.71	5.01



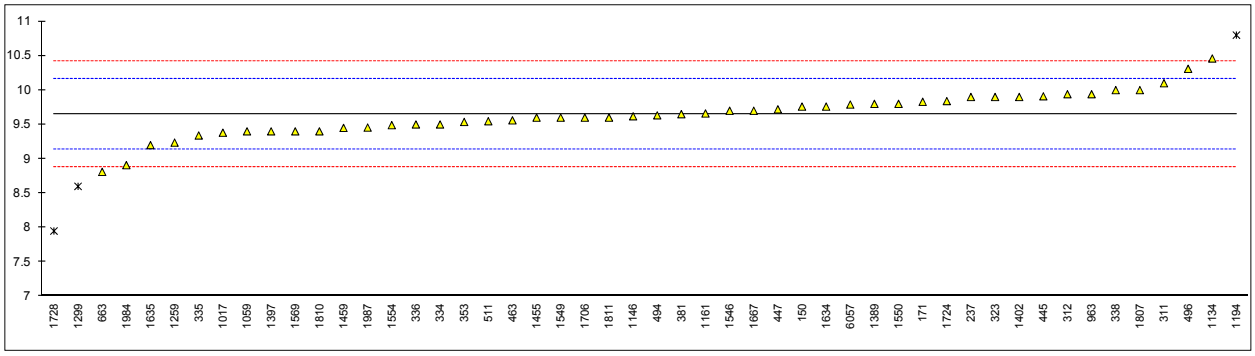


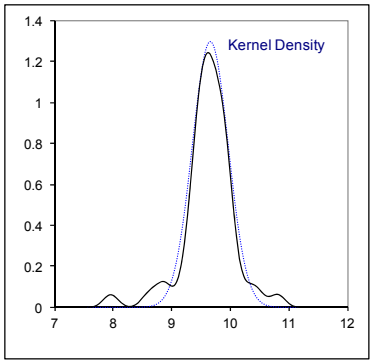
Determination of Fatty Acid Methyl Esters (FAME) content on sample #17090; result in %V/V

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	D7371	9.76		0.43	
159		-----		-----	
171	EN14078	9.83	C	0.70	first reported: 5.29
175		-----		-----	
194		-----		-----	
237	D7371	9.90		0.97	
238		-----		-----	
311	EN14078	10.1		1.74	
312	EN14078	9.94		1.12	
323	EN14078	9.9		0.97	
334	EN14078	9.5		-0.58	
335	EN14078	9.34		-1.20	
336	EN14078	9.5		-0.58	
338	EN14078	10.0		1.35	
351		-----		-----	
353	EN14078	9.537		-0.44	
381	EN14078	9.65		0.00	
444		-----		-----	
445	EN14078	9.91		1.01	
447	EN14078	9.72		0.27	
463	EN14078	9.56		-0.35	
494	EN14078	9.633		-0.06	
496	EN14078	10.31		2.55	
511	D7371	9.5473		-0.40	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663	EN14078	8.81		-3.25	
963	EN14078	9.94		1.12	
1016		-----		-----	
1017	EN14078	9.38		-1.04	
1033		-----		-----	
1059	EN14078	9.4		-0.97	
1065		-----		-----	
1081		-----		-----	
1134	EN14078	10.46		3.13	
1146	D7371	9.6192		-0.12	
1161	EN14078	9.66		0.04	
1194	EN14078	10.8	C,R(0.01)	4.45	first reported: 11
1227		-----		-----	
1259	EN14078	9.236		-1.60	
1299	EN14078	8.6	R(0.01)	-4.06	
1389	EN14078	9.8		0.58	
1397	EN14078	9.4		-0.97	
1402	EN14078	9.9		0.97	
1455	EN14078	9.6		-0.19	
1459	EN14078	9.45		-0.77	
1510		-----		-----	
1546	EN14078	9.7		0.19	
1549	EN14078	9.6		-0.19	
1550	EN14078	9.8		0.58	
1554	EN14078	9.49		-0.62	
1569	EN14078	9.4		-0.97	
1631		-----		-----	
1634	EN14078	9.76		0.43	
1635	EN14078	9.2		-1.74	
1667	EN14078	9.7		0.19	
1706	EN14078	9.6		-0.19	
1724	EN14078	9.84		0.74	
1728	EN14078	7.95	C,R(0.01)	-6.57	first reported: 8.61
1807	EN14078	10.0		1.35	
1810	EN14078	9.4		-0.97	
1811	EN14078	9.6		-0.19	
1984	EN14078	8.9083		-2.87	
1987		9.455		-0.75	
6016		-----		-----	
6057	EN14078	9.79		0.54	

normality	suspect
n	47
outliers	3
mean (n)	9.65
st.dev. (n)	0.308
R(calc.)	0.86
R(EN14078-B:14)	0.72

Compare R(D7371:14)=1.17



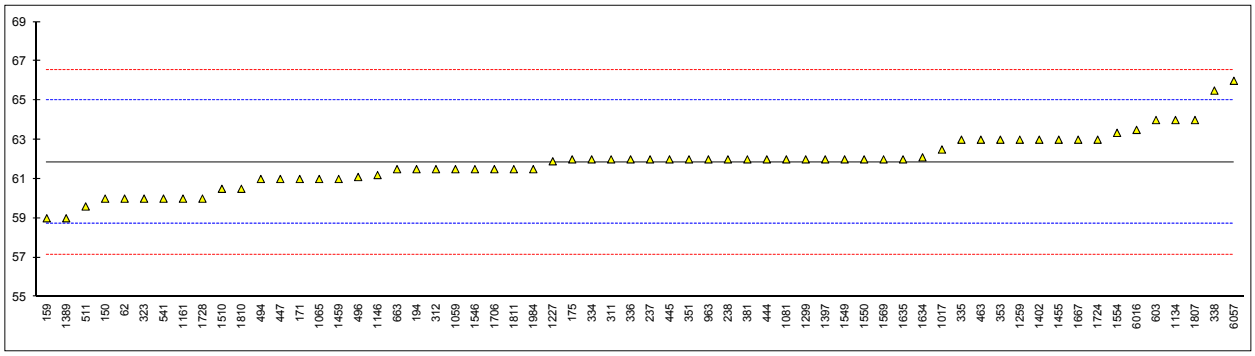


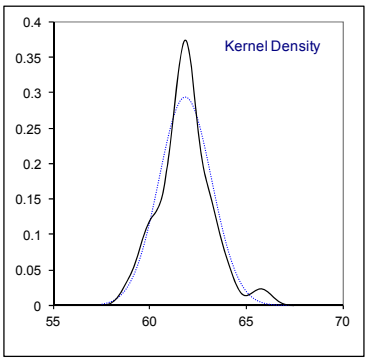
Determination of Flash Point PMcc on sample #17090; result in °C

lab	method	value	mark	z(targ)	remarks
62	D93-A	60.0		-1.18	
120		-----		-----	
150	D93-A	60.0		-1.18	
159	D93-A	59		-1.82	
171	D93-A	61.0		-0.54	
175	D93-A	62		0.10	
194	D93-A	61.5		-0.22	
237	D93-A	62.0		0.10	
238	D93-A	62.0		0.10	
311	ISO2719-A	62.0		0.10	
312	D93-A	61.5		-0.22	
323	ISO2719-A	60.0		-1.18	
334	D93-A	62.0		0.10	
335	ISO2719-A	63.0		0.73	
336	ISO2719-A	62.0		0.10	
338	ISO2719-B	65.5		2.33	
351	ISO2719-A	62.00		0.10	
353	ISO2719-A	63.0		0.73	
381	ISO2719-A	62.0		0.10	
444	D93-A	62.0		0.10	
445	D93-A	62.0		0.10	
447	D93-A	61.0		-0.54	
463	ISO2719-A	63.0		0.73	
494	ISO2719-A	61		-0.54	
496	ISO2719-A	61.1		-0.48	
511	D93-A	59.6		-1.44	
529		-----		-----	
541	ISO2719-A	60.0		-1.18	
556		-----		-----	
603	D93-A	64		1.37	
621		-----		-----	
633		-----		-----	
663	D93-A	61.5		-0.22	
963	ISO2719-A	62.0		0.10	
1016		-----		-----	
1017	D93-A	62.5		0.41	
1033		-----		-----	
1059	ISO2719-A	61.5		-0.22	
1065	D93-A	61		-0.54	
1081	D93-A	62.0		0.10	
1134	D93-A	64.0		1.37	
1146	D93-A	61.2		-0.41	
1161	ISO2719-A	60.0		-1.18	
1194		-----		-----	
1227	D93-A	61.9		0.03	
1259	ISO2719-A	63.0		0.73	
1299	D93-A	62.0		0.10	
1389	D93-A	59.0		-1.82	
1397	ISO2719-A	62.0		0.10	
1402	ISO2719-A	63.0		0.73	
1455	D93-A	63.0		0.73	
1459	ISO2719-A	61.0		-0.54	
1510	D93-A	60.5		-0.86	
1546	ISO2719-A	61.5		-0.22	
1549	ISO2719-A	62.0		0.10	
1550	ISO2719-A	62.0		0.10	
1554	ISO2719-A	63.35		0.96	
1569	D93-A	62.0		0.10	
1631		-----		-----	
1634	ISO2719-A	62.1		0.16	
1635	ISO2719-A	62.0		0.10	
1667	ISO2719-A	63.0		0.73	
1706	ISO2719-A	61.5		-0.22	
1724	D93-A	63		0.73	
1728	D93-A	60		-1.18	
1807	D93-A	64.0		1.37	
1810	ISO2719-A	60.5	C	-0.86	first reported: -13
1811	ISO2719-A	61.5		-0.22	
1984	ISO2719-A	61.5		-0.22	
1987		-----		-----	
6016		63.5		1.05	
6057	ISO2719-A	66.0		2.65	

normality	suspect
n	62
outliers	0
mean (n)	61.851
st.dev. (n)	1.3545
R(calc.)	3.793
R(ISO2719-A:16)	4.391

Compare R(D93-A:16a)=4.91
Compare R(EN590:13-Annex A)=3.5



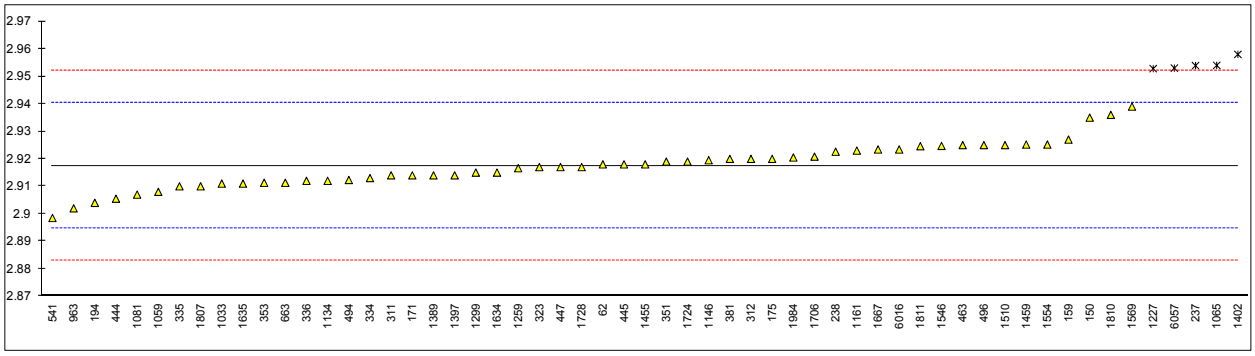


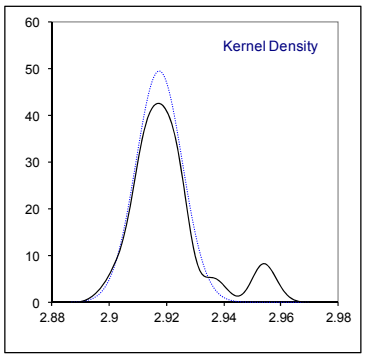
Determination of Kinematic Viscosity at 40°C on sample #17090; result in mm^2/s

lab	method	value	mark	z(targ)	remarks
62	D445	2.918		0.04	
120		-----		-----	
150	ISO3104	2.935		1.53	
159	D445	2.927		0.83	
171	D445	2.914		-0.30	
175	D445	2.920		0.22	
194	D445	2.904		-1.18	
237	D445	2.9539116	C,R(0.01)	3.17	first reported: 2.97848
238	D445	2.9226		0.45	
311	D445	2.914		-0.30	
312	D445	2.920		0.22	
323	ISO3104	2.917		-0.04	
334	ISO3104	2.913		-0.39	
335	ISO3104	2.910		-0.65	
336	ISO3104	2.912		-0.48	
338		-----		-----	
351	ISO3104	2.919		0.13	
353	ISO3104	2.9113		-0.54	
381	ISO3104	2.920		0.22	
444	D445	2.9055		-1.04	
445	IP71	2.918		0.04	
447	D445	2.917		-0.04	
463	D7042	2.9250		0.65	
494	ISO3104	2.9123		-0.45	
496	ISO3104	2.9250		0.65	
511		-----		-----	
529		-----		-----	
541	ISO3104	2.8985		-1.66	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663	D445	2.9113		-0.54	
963	ISO3104	2.902		-1.35	
1016		-----		-----	
1017		-----		-----	
1033	IP71	2.911		-0.57	
1059	ISO3104	2.908		-0.83	
1065	D445	2.954	R(0.01)	3.18	
1081	D445	2.907		-0.91	
1134	IP71	2.912		-0.48	
1146	D445	2.9195		0.18	
1161	ISO3104	2.923		0.48	
1194		-----		-----	
1227	D445	2.9528	R(0.01)	3.08	
1259	ISO3104	2.9166		-0.08	
1299	D445	2.915		-0.22	
1389	D445	2.914		-0.30	
1397	D7042	2.914		-0.30	
1402	ISO3104	2.958	R(0.01)	3.53	
1455	D445	2.918		0.04	
1459	D7042	2.9252		0.67	
1510	D445	2.925		0.65	
1546	ISO3104	2.9247		0.63	
1549		-----		-----	
1550		-----		-----	
1554	ISO3104	2.9252		0.67	
1569	ISO3104	2.939		1.88	
1631		-----		-----	
1634	ISO3104	2.915		-0.22	
1635	ISO3104	2.911		-0.57	
1667	ISO3104	2.9234		0.52	
1706	ISO3104	2.9208		0.29	
1724	D445	2.919		0.13	
1728	D445	2.9170		-0.04	
1807	ISO3104	2.910		-0.65	
1810	ISO3104	2.936		1.61	
1811	ISO3104	2.9246		0.62	
1984	ISO3104	2.9205		0.26	
1987		-----		-----	
6016	D7042	2.9234		0.52	
6057	ISO3104	2.953	R(0.01)	3.10	

normality	OK
n	52
outliers	5
mean (n)	2.9175
st.dev. (n)	0.00809
R(calc.)	0.0226
R(ISO3104:94)	0.0321

Compare R(EN590:13-Annex A)=0.0525





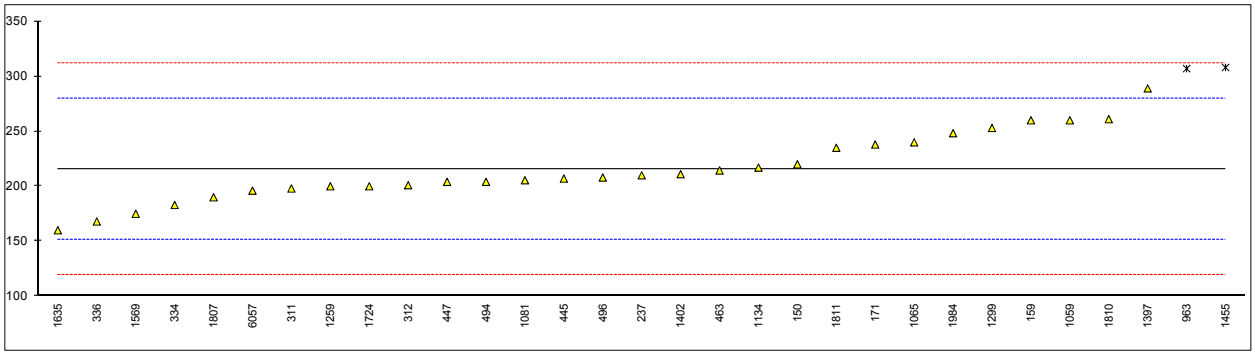
Determination of Lubricity by HFRR at 60°C on sample #17090; result in µm

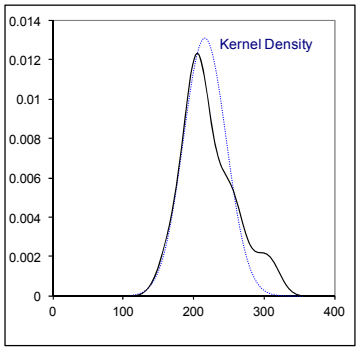
lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	D6079	220		0.13	
159	D6079	260		1.38	
171	ISO12156-1	238		0.69	
175		-----		-----	
194		-----		-----	
237	D6079	210		-0.18	
238		-----		-----	
311	ISO12156-1	198		-0.55	
312	ISO12156-1	201		-0.46	
323		-----		-----	
334	ISO12156-1	183		-1.02	
335		-----		-----	
336	ISO12156-1	168		-1.48	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	IP450	207		-0.27	
447	IP450	204		-0.36	
463	ISO12156-1	214.4		-0.04	
494	ISO12156-1	204		-0.36	
496	ISO12156-1	208.0		-0.24	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	ISO12156-1	307	R(0.05)	2.84	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	ISO12156-1	260		1.38	
1065	ISO12156-1	240.0		0.76	
1081	ISO12156-1	205.5		-0.32	
1134	ISO12156-1	217		0.04	
1146		-----		-----	
1161		-----		-----	
1194		-----		-----	
1227		-----		-----	
1259	ISO12156-1	200		-0.49	
1299	ISO12156-1	253		1.16	
1389		-----		-----	
1397	ISO12156-1	289		2.28	
1402	ISO12156-1	211		-0.15	
1455	ISO12156-1	308	R(0.05)	2.87	
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569	ISO12156-1	175		-1.27	
1631		-----		-----	
1634		-----		-----	
1635	ISO12156-1	160		-1.73	
1667		-----		-----	
1706		-----		-----	
1724	IP450	200		-0.49	
1728		-----		-----	
1807	ISO12156-1	190		-0.80	
1810	ISO12156-1	261		1.41	
1811	ISO12156-1	235		0.60	
1984	ISO12156-1	248.2865		1.01	
1987		-----		-----	
6016		-----		-----	
6057	ISO12156-1	196		-0.61	

normality	OK
n	29
outliers	2
mean (n)	215.73
st.dev. (n)	30.488
R(calc.)	85.37
R(ISO12156-1-B:16)	90

Compare R(ISO12156-1-A:16)=80
Compare R(D6079:11)=80 (digital camera)

NB: ISO 12156-1 method A=digital camera and method B = visual

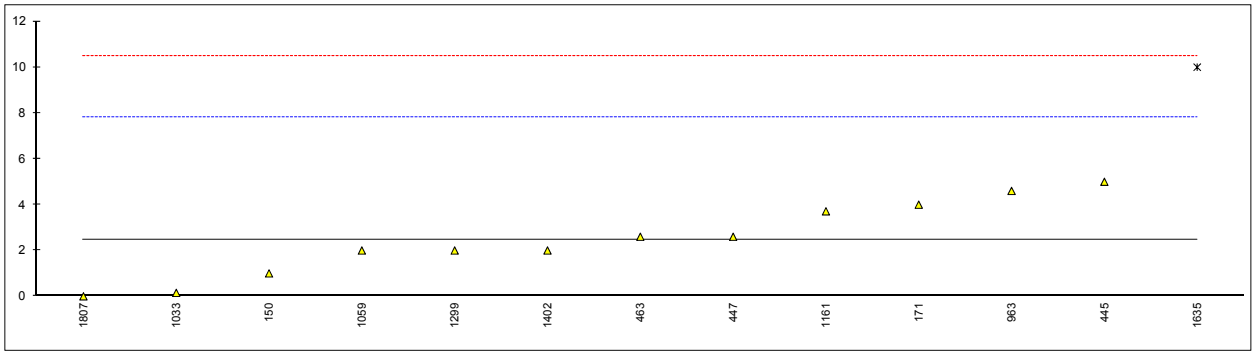


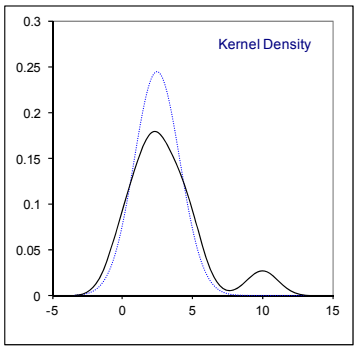


Determination of Oxidation Stability ISO12205 on sample #17090; result in g/m^3

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	D2274	1		-0.55	
159		-----		-----	
171	ISO12205	4		0.57	
175		-----		-----	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311		-----		-----	
312		-----		-----	
323		-----		-----	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445	IP388	5		0.95	
447	ISO12205	2.6		0.05	
463	ISO12205	2.6		0.05	
494		-----		-----	
496		-----		-----	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	ISO12205	4.6		0.80	
1016		-----		-----	
1017		-----		-----	
1033	D2274	0.15		-0.87	
1059	ISO12205	2		-0.18	
1065		-----		-----	
1081		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161	ISO12205	3.71		0.46	
1194		-----		-----	
1227		-----		-----	
1259		-----		-----	
1299	D2274	2		-0.18	
1389		-----		-----	
1397		-----		-----	
1402	ISO12205	2		-0.18	
1455	ISO12205	<1		-----	
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635	ISO12205	10	G(0.05)	2.82	
1667		-----		-----	
1706		-----		-----	
1724		-----		-----	
1728		-----		-----	
1807	ISO12205	0		-0.93	
1810		-----		-----	
1811		-----		-----	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	ISO12205	<1		-----	

normality	OK
n	12
outliers	1
mean (n)	2.472
st.dev. (n)	1.6281
R(calc.)	4.559
R(ISO12205:95)	7.474

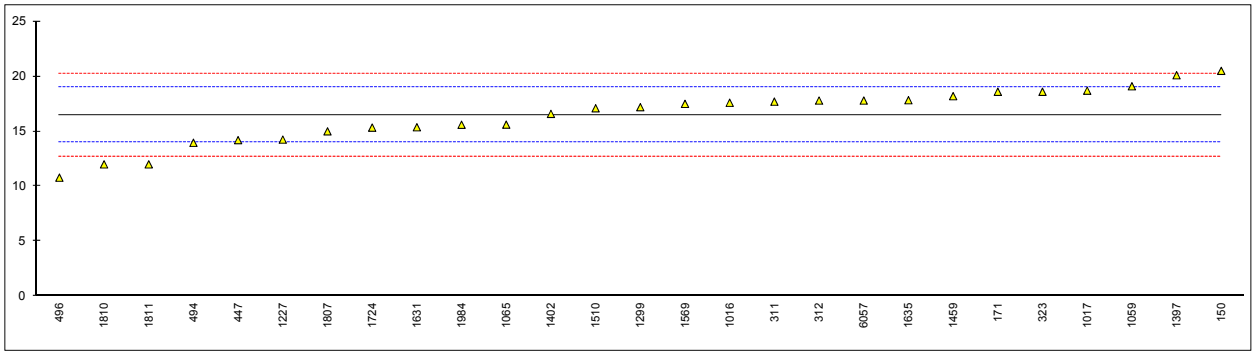


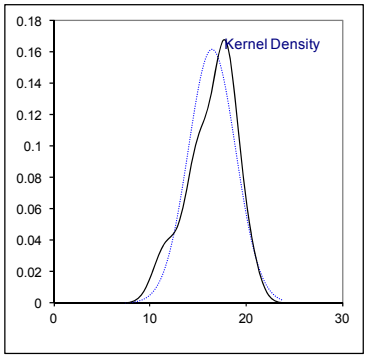


Determination of Oxidation Stability induction period EN15751 on sample #17090; result in hours

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	EN15751	20.5		3.20	
159		-----		-----	
171	EN15751	18.6		1.69	
175		-----		-----	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311	EN15751	17.7		0.97	
312	EN15751	17.8		1.05	
323	EN15751	18.6		1.69	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445		-----		-----	
447	EN15751	14.2		-1.82	
463		-----		-----	
494	EN15751	13.96		-2.01	
496	EN15751	10.79		-4.54	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963		-----		-----	
1016	EN15751	17.60		0.89	
1017	EN15751	18.7		1.77	
1033		-----		-----	
1059	EN15751	19.1		2.09	
1065	EN15751	15.61		-0.70	
1081		-----		-----	
1134		-----		-----	
1146		-----		-----	
1161		-----		-----	
1194		-----		-----	
1227	EN15751	14.25		-1.78	
1259		-----		-----	
1299	EN15751	17.2		0.57	
1389		-----		-----	
1397	EN15751	20.1		2.88	
1402	EN15751	16.59		0.09	
1455		-----		-----	
1459	EN15751	18.20		1.37	
1510	EN14112	17.1		0.49	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569	EN15751	17.5		0.81	
1631	EN15751	15.37		-0.89	
1634		-----		-----	
1635	EN15751	17.83		1.07	
1667		-----		-----	
1706		-----		-----	
1724	EN15751	15.34		-0.91	
1728		-----		-----	
1807	EN15751	15		-1.18	
1810	EN15751	12		-3.58	
1811	EN15751	12		-3.58	
1984	EN15751	15.60		-0.70	
1987		-----		-----	
6016		-----		-----	
6057	EN15751	17.8		1.05	

normality	OK
n	27
outliers	0
mean (n)	16.483
st.dev. (n)	2.4675
R(calc.)	6.909
R(EN15751:14)	3.511

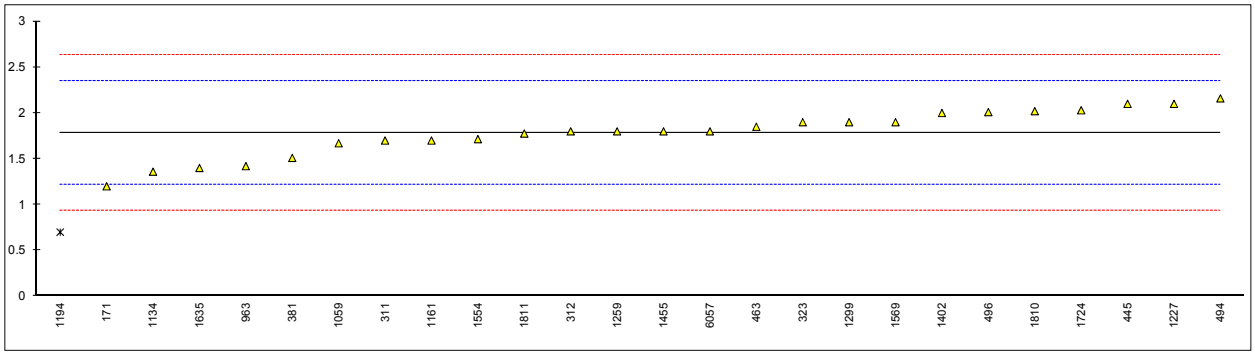


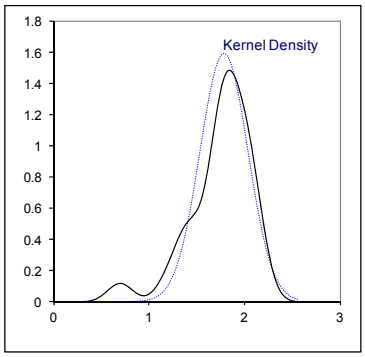


Determination of Polycyclic Aromatic Hydrocarbons on sample #17090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150		-----		-----	
159		-----		-----	
171	EN12916	1.2		-2.06	
175		-----		-----	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311	EN12916	1.7		-0.30	
312	EN12916	1.8		0.05	
323	EN12916	1.9		0.41	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381	EN12916	1.51		-0.97	
444		-----		-----	
445	IP391	2.10		1.11	
447		-----		-----	
463	EN12916	1.85		0.23	
494	EN12916	2.16		1.32	
496	EN12916	2.01		0.79	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	EN12916	1.42		-1.28	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	EN12916	1.67		-0.40	
1065		-----		-----	
1081		-----		-----	
1134	IP391	1.36		-1.50	
1146		-----		-----	
1161	EN12916	1.7		-0.30	
1194	INH-12916	0.7	R(0.01)	-3.82	
1227	EN12916	2.1		1.11	
1259	EN12916	1.8		0.05	
1299	EN12916	1.9		0.41	
1389		-----		-----	
1397		-----	W	-----	first reported: 2.6
1402	EN12916	2.0		0.76	
1455	EN12916	1.8		0.05	
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554	EN12916	1.715		-0.25	
1569	EN12916	1.90		0.41	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	1.4		-1.36	
1667		-----		-----	
1706		-----		-----	
1724	IP391	2.03		0.86	
1728		-----		-----	
1807		-----		-----	
1810	IP391	2.02		0.83	
1811	IP391	1.776		-0.03	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	EN12916	1.8		0.05	

normality	OK
n	25
outliers	1
mean (n)	1.785
st.dev. (n)	0.2507
R(calc.)	0.702
R(EN12916:16)	0.795

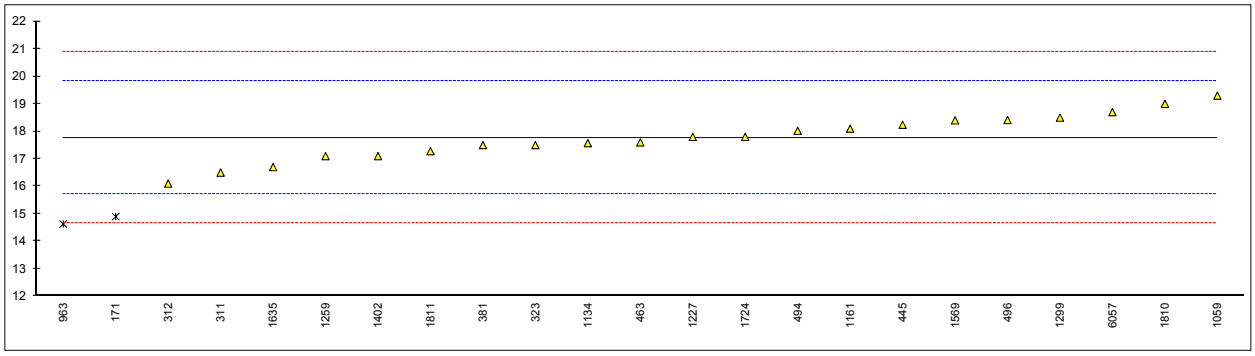


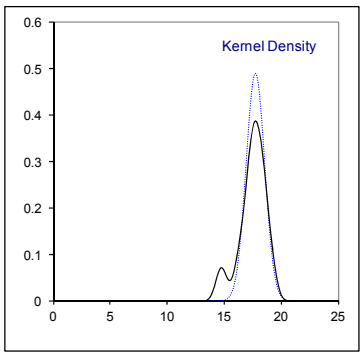


Determination of Mono-Aromatic Hydrocarbons on sample #17090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150		-----		-----	
159		-----		-----	
171	EN12916	14.9	DG(0.05)	-2.77	
175		-----		-----	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311	EN12916	16.5		-1.23	
312	EN12916	16.1		-1.61	
323	EN12916	17.5		-0.26	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381	EN12916	17.5		-0.26	
444		-----		-----	
445	IP391	18.24		0.45	
447		-----		-----	
463	EN12916	17.60		-0.17	
494	EN12916	18.02		0.24	
496	EN12916	18.41		0.61	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	EN12916	14.63	DG(0.05)	-3.03	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	EN12916	19.3		1.47	
1065		-----		-----	
1081		-----		-----	
1134	IP391	17.57		-0.20	
1146		-----		-----	
1161	EN12916	18.1		0.32	
1194		-----		-----	
1227	EN12916	17.8		0.03	
1259	EN12916	17.1		-0.65	
1299	EN12916	18.5		0.70	
1389		-----		-----	
1397		-----		-----	
1402	EN12916	17.1		-0.65	
1455		-----		-----	
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569	EN12916	18.4		0.61	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	16.7		-1.03	
1667		-----		-----	
1706		-----		-----	
1724	IP391	17.80		0.03	
1728		-----		-----	
1807		-----		-----	
1810	IP391	19.0		1.18	
1811	IP391	17.280		-0.47	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	EN12916	18.7		0.89	

normality	OK
n	21
outliers	2
mean (n)	17.772
st.dev. (n)	0.8170
R(calc.)	2.288
R(EN12916:16)	2.903

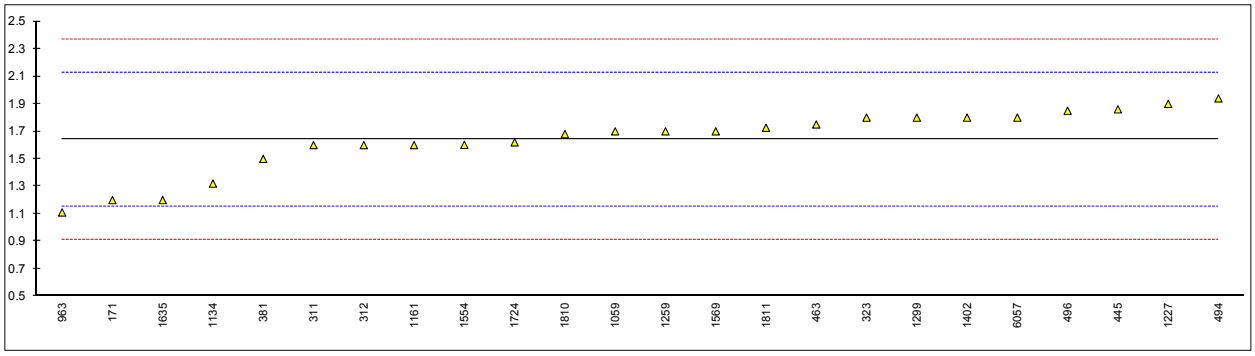


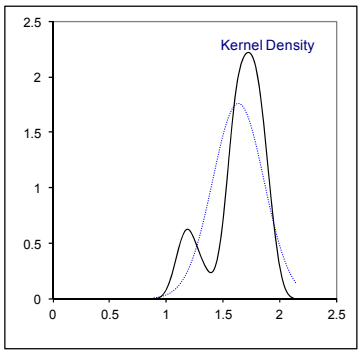


Determination of Di-Aromatic Hydrocarbons on sample #17090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150		-----		-----	
159		-----		-----	
171	EN12916	1.2		-1.81	
175		-----		-----	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311	EN12916	1.6		-0.16	
312	EN12916	1.6		-0.16	
323	EN12916	1.8		0.66	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381	EN12916	1.5		-0.57	
444		-----		-----	
445	IP391	1.86		0.90	
447		-----		-----	
463	EN12916	1.75		0.45	
494	EN12916	1.94		1.23	
496	EN12916	1.85		0.86	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	EN12916	1.11		-2.17	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	EN12916	1.7		0.25	
1065		-----		-----	
1081		-----		-----	
1134	IP391	1.32		-1.31	
1146		-----		-----	
1161	EN12916	1.6		-0.16	
1194		-----		-----	
1227	EN12916	1.9		1.07	
1259	EN12916	1.7		0.25	
1299	EN12916	1.8		0.66	
1389		-----		-----	
1397		-----		-----	
1402	EN12916	1.8		0.66	
1455		-----		-----	
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554	EN12916	1.602		-0.16	
1569	EN12916	1.70		0.25	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	1.2		-1.81	
1667		-----		-----	
1706		-----		-----	
1724	IP391	1.62		-0.08	
1728		-----		-----	
1807		-----		-----	
1810	IP391	1.68		0.16	
1811	IP391	1.726		0.35	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	EN12916	1.8		0.66	

normality	OK
n	24
outliers	0
mean (n)	1.640
st.dev. (n)	0.2266
R(calc.)	0.635
R(EN12916:16)	0.682

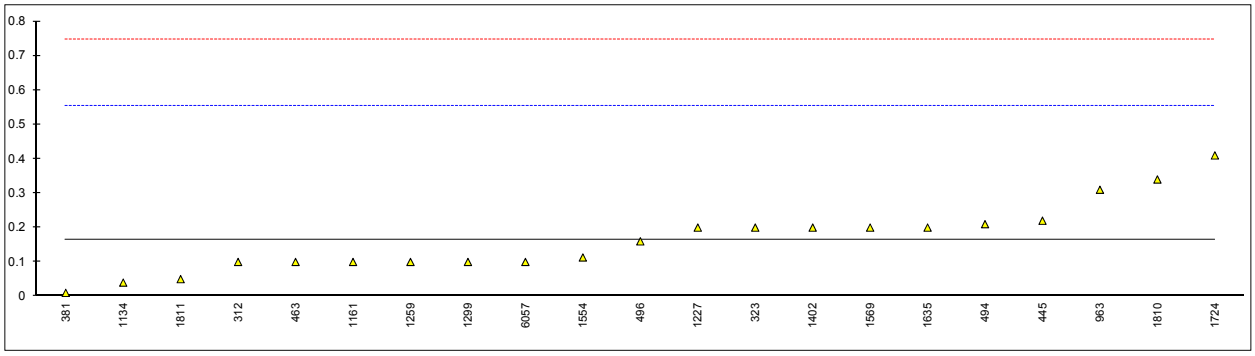


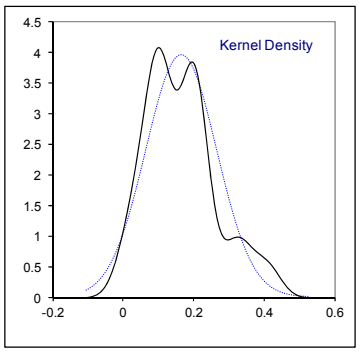


Determination of Tri+-Aromatic Hydrocarbons on sample #17090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150		-----		-----	
159		-----		-----	
171	EN12916	<0.1		-----	
175		-----		-----	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311	EN12916	<0.1		-----	
312	EN12916	0.1		-0.33	
323	EN12916	0.2		0.18	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381	EN12916	0.01		-0.80	
444		-----		-----	
445	IP391	0.22		0.28	
447		-----		-----	
463	EN12916	0.10		-0.33	
494	EN12916	0.21		0.23	
496	EN12916	0.16		-0.03	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	EN12916	0.31		0.75	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	EN12916	<0,1		-----	
1065		-----		-----	
1081		-----		-----	
1134	IP391	0.04		-0.64	
1146		-----		-----	
1161	EN12916	0.1		-0.33	
1194		-----		-----	
1227	EN12916	0.2		0.18	
1259	EN12916	0.1		-0.33	
1299	EN12916	0.1		-0.33	
1389		-----		-----	
1397		-----		-----	
1402	EN12916	0.2		0.18	
1455		-----		-----	
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554	EN12916	0.113		-0.27	
1569	EN12916	0.20		0.18	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	0.2		0.18	
1667		-----		-----	
1706		-----		-----	
1724	IP391	0.41		1.26	
1728		-----		-----	
1807		-----		-----	
1810	IP391	0.34		0.90	
1811	IP391	0.050		-0.59	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	EN12916	0.1		-0.33	

normality	OK
n	21
outliers	0
mean (n)	0.165
st.dev. (n)	0.1009
R(calc.)	0.283
R(EN12916:16)	0.544

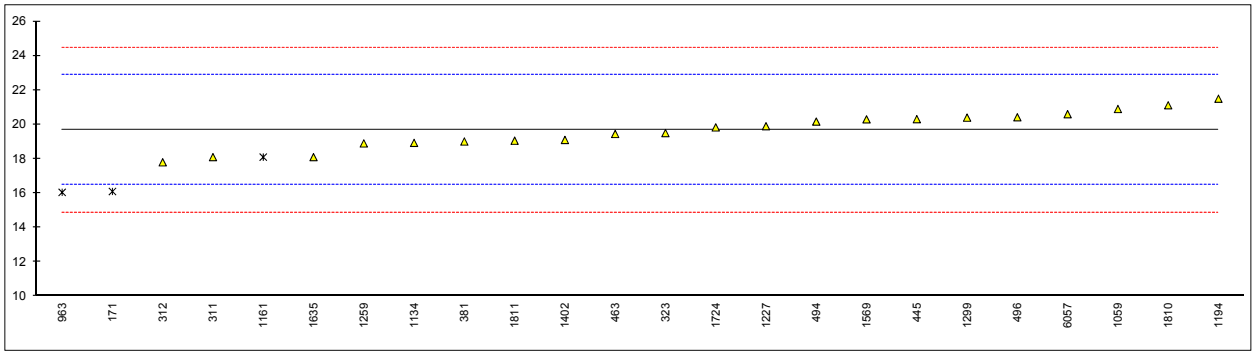


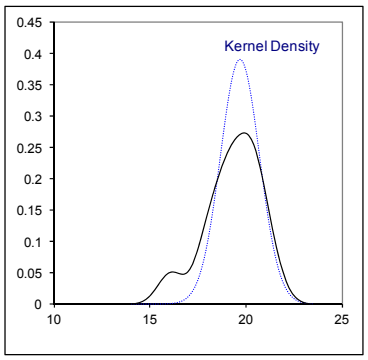


Determination of Total Aromatic Hydrocarbons on sample #17090; result in %M/M

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150		-----		-----	
159		-----		-----	
171	EN12916	16.1	ex	-2.24	excluded; outlier in MAH
175		-----		-----	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311	EN12916	18.1		-0.99	
312	EN12916	17.8		-1.18	
323	EN12916	19.5		-0.12	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353		-----		-----	
381	EN12916	19.01		-0.42	
444		-----		-----	
445	IP391	20.31		0.39	
447		-----		-----	
463	EN12916	19.45		-0.15	
494	EN12916	20.17		0.30	
496	EN12916	20.42		0.46	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	EN12916	16.05	ex	-2.27	excluded; outlier in MAH
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	EN12916	20.9		0.76	
1065		-----		-----	
1081		-----		-----	
1134	IP391	18.93		-0.47	
1146		-----		-----	
1161	EN12916	18.1	ex, E	-0.99	excluded; only MAH; iis calculated: 19.8
1194	INH-12916	21.5		1.13	
1227	EN12916	19.9		0.13	
1259	EN12916	18.9		-0.49	
1299	EN12916	20.4		0.45	
1389		-----		-----	
1397		-----		-----	
1402	EN12916	19.1		-0.37	
1455		-----		-----	
1459		-----		-----	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569	EN12916	20.30		0.38	
1631		-----		-----	
1634		-----		-----	
1635	EN12916	18.1		-0.99	
1667		-----		-----	
1706		-----		-----	
1724	IP391	19.83		0.09	
1728		-----		-----	
1807		-----		-----	
1810	IP391	21.12		0.90	
1811	IP391	19.056		-0.39	
1984		-----		-----	
1987		-----		-----	
6016		-----		-----	
6057	EN12916	20.6		0.57	

normality	OK
n	21
outliers	0+3ex
mean (n)	19.686
st.dev. (n)	1.0207
R(calc.)	2.858
R(EN12916:16)	4.480

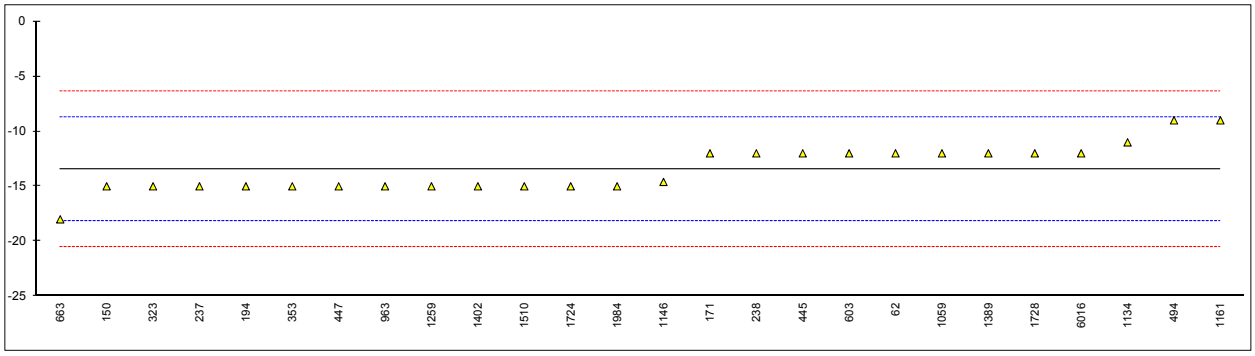


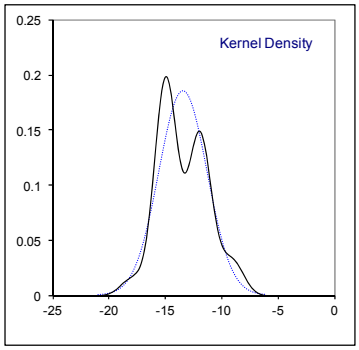


Determination of Pour Point, manual on sample #17090; results in °C

lab	method	value	mark	z(targ)	remarks
62	D97	-12		0.61	
120		-----		-----	
150	ISO3016	-15		-0.66	
159		-----		-----	
171	D97	-12		0.61	
175		-----		-----	
194	D97	-15		-0.66	
237	D97	-15		-0.66	
238	D97	-12		0.61	
311		-----		-----	
312		-----		-----	
323	ISO3016	-15		-0.66	
334		-----		-----	
335		-----		-----	
336		-----		-----	
338		-----		-----	
351		-----		-----	
353	IP15	-15		-0.66	
381		-----		-----	
444		-----		-----	
445	IP15	-12		0.61	
447	D97	-15		-0.66	
463		-----		-----	
494	ISO3016	-9		1.89	
496		-----		-----	
511		-----		-----	
529		-----		-----	
541		-----		-----	
556		-----		-----	
603	D97	-12		0.61	
621		-----		-----	
633		-----		-----	
663	D97	-18		-1.93	
963	ISO3016	-15		-0.66	
1016		-----		-----	
1017		-----		-----	
1033		-----		-----	
1059	ISO3016	-12		0.61	
1065		-----		-----	
1081		-----		-----	
1134	IP15	-11		1.04	
1146	D97	-14.6	C	-0.49	first reported: 14.6
1161	ISO3016	-9		1.89	
1194		-----		-----	
1227		-----		-----	
1259	ISO3016	-15		-0.66	
1299		-----		-----	
1389	D97	-12		0.61	
1397		-----		-----	
1402	ISO3016	-15		-0.66	
1455		-----		-----	
1459		-----		-----	
1510	D97	-15	C	-0.66	first reported: -21
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569		-----		-----	
1631		-----		-----	
1634		-----		-----	
1635		-----		-----	
1667		-----		-----	
1706		-----		-----	
1724	D97	-15		-0.66	
1728	D97	-12.0		0.61	
1807		-----		-----	
1810		-----		-----	
1811		-----		-----	
1984	ISO3016	-15		-0.66	
1987		-----		-----	
6016	D97	-12		0.61	
6057		-----		-----	

normality	OK
n	26
outliers	0
mean (n)	-13.45
st.dev. (n)	2.148
R(calc.)	6.02
R(ISO3016:94)	6.59

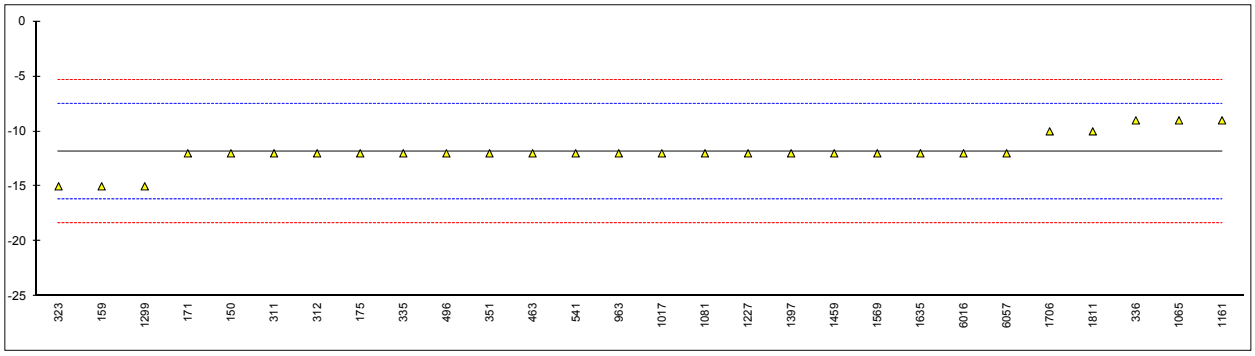


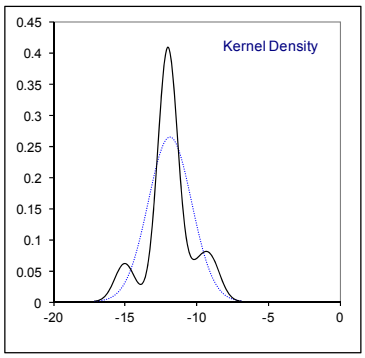


Determination of Pour Point, automated (3°C interval) on sample #17090; results in °C

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	D5950	-12		-0.07	
159	D5950	-15		-1.44	
171	D5950	-12		-0.07	
175	D5950	-12		-0.07	
194		-----		-----	
237		-----		-----	
238		-----		-----	
311	D5950	-12		-0.07	
312	D5950	-12		-0.07	
323	D5950	-15		-1.44	
334		-----		-----	
335	ISO3016	-12		-0.07	
336	D5950	-9		1.31	
338		-----		-----	
351	D6749	-12		-0.07	
353		-----		-----	
381		-----		-----	
444		-----		-----	
445		-----		-----	
447		-----		-----	
463	D6892	-12		-0.07	
494		-----		-----	
496	D6892	-12.0		-0.07	
511		-----		-----	
529		-----		-----	
541	D5950	-12		-0.07	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663		-----		-----	
963	D5950	-12		-0.07	
1016		-----		-----	
1017	D5950	-12	C	-0.07	first reported: -18
1033		-----		-----	
1059		-----		-----	
1065	D5950	-9		1.31	
1081	D5950 *)	-12		-0.07	reported: Automated at 1°C interval
1134		-----		-----	
1146		-----		-----	
1161	D6749	-9		1.31	
1194		-----		-----	
1227	D97	-12		-0.07	
1259		-----		-----	
1299	D97	-15		-1.44	
1389		-----		-----	
1397	D5950	-12		-0.07	
1402		-----		-----	
1455		-----		-----	
1459	In house	-12.0		-0.07	
1510		-----		-----	
1546		-----		-----	
1549		-----		-----	
1550		-----		-----	
1554		-----		-----	
1569	D5950	-12		-0.07	
1631		-----		-----	
1634		-----		-----	
1635	D5950	-12		-0.07	
1667		-----		-----	
1706	D5950	-10		0.85	
1724		-----		-----	
1728		-----		-----	
1807		-----		-----	
1810		-----		-----	
1811	D5950	-10		0.85	
1984		-----		-----	
1987		-----		-----	
6016	D5950	-12		-0.07	
6057	D5950	-12		-0.07	

normality	suspect
n	28
outliers	0
mean (n)	-11.86
st.dev. (n)	1.508
R(calc.)	4.22
R(D5950:14)	6.1



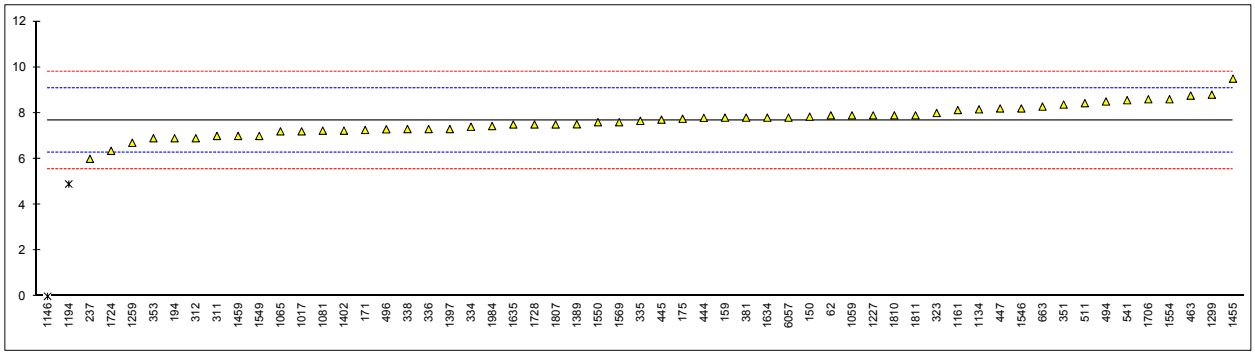


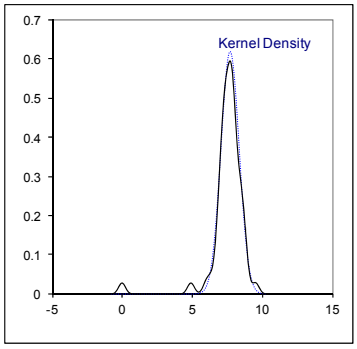
Determination of Sulphur Content on sample #17090; result in mg/kg

lab	method	value	mark	z(targ)	remarks
62	D5453	7.9		0.30	
120		-----		-----	
150	ISO20846	7.84		0.22	
159	D5453	7.8		0.16	
171	D2622	7.26		-0.60	
175	D5453	7.75		0.09	
194	D2622	6.9		-1.11	
237	D5453	6.0		-2.38	
238		-----		-----	
311	ISO20846	7.0		-0.97	
312	ISO20846	6.9		-1.11	
323	ISO20846	8.0		0.45	
334	ISO20846	7.4		-0.40	
335	ISO20846	7.66		-0.03	
336	ISO20846	7.3		-0.54	
338	ISO20846	7.3		-0.54	
351	ISO20846	8.37		0.97	
353	IP531	6.9		-1.11	
381	ISO20846	7.8		0.16	
444	D5453	7.79		0.15	
445	IP490	7.71		0.04	
447	D5453	8.2		0.73	
463	ISO20846	8.76		1.52	
494	ISO20846	8.504		1.16	
496	ISO20846	7.29		-0.56	
511	D5453	8.43		1.05	
529		-----		-----	
541	ISO20846	8.56		1.24	
556		-----		-----	
603		-----		-----	
621		-----		-----	
633		-----		-----	
663	D5453	8.28		0.84	
963		-----		-----	
1016		-----		-----	
1017	ISO20846	7.2		-0.68	
1033		-----		-----	
1059	ISO20846	7.9		0.30	
1065	D5453	7.2		-0.68	
1081	ISO20846	7.23		-0.64	
1134	IP490	8.16		0.67	
1146	D4294	0.000	R(0.01)	-10.86	
1161	ISO20846	8.13		0.63	
1194	INH-7220	4.9	C,R(0.01)	-3.94	first reported: 11.2
1227	D5453	7.9		0.30	
1259	ISO20846	6.7		-1.39	
1299	ISO20846	8.8		1.58	
1389	ISO20846	7.51		-0.25	
1397	ISO20846	7.3		-0.54	
1402	IP490	7.23		-0.64	
1455	ISO20884	9.5		2.57	
1459	ISO8754	7.0		-0.97	
1510		-----	W	-----	first reported: 12
1546	ISO20846	8.2		0.73	
1549	D7212	7.0		-0.97	
1550	ISO20884	7.6		-0.12	
1554	ISO20846	8.601		1.30	
1569	ISO20846	7.6		-0.12	
1631		-----		-----	
1634	ISO20846	7.8		0.16	
1635	ISO20846	7.5		-0.26	
1667		-----		-----	
1706	ISO20846	8.6		1.29	
1724	D5453	6.35		-1.89	
1728	D5453	7.5		-0.26	
1807	ISO20846	7.5		-0.26	
1810	ISO20846	7.9		0.30	
1811	ISO20846	7.9		0.30	
1984	ISO20846	7.43		-0.36	
1987		-----		-----	
6016		-----		-----	
6057	ISO20846	7.8		0.16	

normality	OK
n	55
outliers	2
mean (n)	7.68
st.dev. (n)	0.644
R(calc.)	1.80
R(ISO 20846:11)	1.98

Compare R(D5453:16e1)=2.68

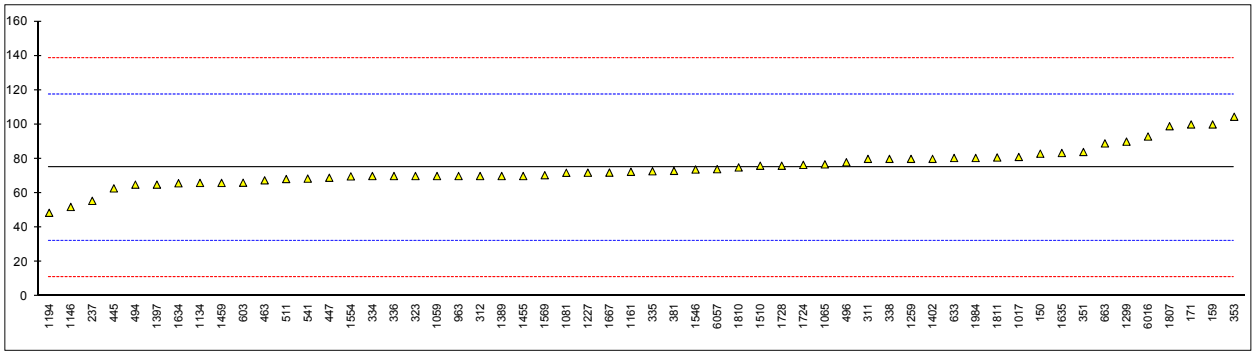


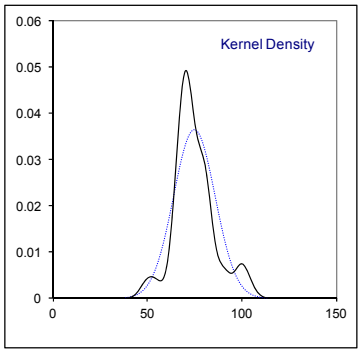


Determination of Water content, KF on sample #17090; result in mg/kg

lab	method	value	mark	z(targ)	remarks
62		-----		-----	
120		-----		-----	
150	ISO12937	83		0.38	
159	D6304	100		1.18	
171	D6304	100		1.18	
175		-----		-----	
194		-----		-----	
237	D6304	55.56		-0.91	
238		-----		-----	
311	ISO12937	80		0.24	
312	ISO12937	70		-0.23	
323	ISO12937	70		-0.23	
334	ISO12937	70		-0.23	
335	ISO12937	72.8		-0.10	
336	ISO12937	70		-0.23	
338	ISO12937	80		0.24	
351	ISO12937	84		0.43	
353	IP438	104.5		1.39	
381	ISO12937	73		-0.09	
444		-----		-----	
445	IP438	62.83		-0.57	
447	IP438	69		-0.28	
463	D6304	67.5		-0.35	
494	ISO12937	65		-0.47	
496	ISO12937	78		0.14	
511	D6304	68.26		-0.31	
529		-----		-----	
541	ISO12937	68.5		-0.30	
556		-----		-----	
603	D6304	66.1		-0.41	
621		-----		-----	
633	D6304	80.5		0.26	
663	E203	89.0		0.66	
963	ISO12937	70		-0.23	
1016		-----		-----	
1017	ISO12937	81.1		0.29	
1033		-----		-----	
1059	ISO12937	70		-0.23	
1065	D6304	76.8		0.09	
1081	ISO12937	71.87		-0.14	
1134	IP438	66		-0.42	
1146	D6304	52	C	-1.08	first reported: 0.0052 mg/kg
1161	ISO12937	72.473		-0.12	
1194	ISO12937	48.61		-1.24	
1227	D6304	71.95		-0.14	
1259	ISO12937	80		0.24	
1299	ISO12937	90		0.71	
1389	ISO12937	70		-0.23	
1397	ISO12937	65		-0.47	
1402	ISO12937	80		0.24	
1455	ISO12937	70		-0.23	
1459	ISO12937	66		-0.42	
1510	IP438	76		0.05	
1546	ISO12937	73.79		-0.05	
1549		-----		-----	
1550		-----		-----	
1554	ISO12937	69.81		-0.24	
1569	In house	70.5		-0.21	
1631		-----		-----	
1634	ISO12937	65.8		-0.43	
1635	ISO12937	83.4		0.40	
1667	ISO12937	72.0		-0.14	
1706		-----		-----	
1724	D6304	76.5		0.07	
1728	E203	76		0.05	
1807	ISO12937	99		1.13	
1810	ISO12937	75		0.00	
1811	ISO12937	80.8		0.28	
1984	ISO12937	80.50		0.26	
1987		-----		-----	
6016	D6304	93		0.85	
6057	ISO12937	74		-0.04	

normality	suspect
n	56
outliers	0
mean (n)	74.919
st.dev. (n)	10.9996
R(calc.)	30.799
R(ISO12937:00)	59.524

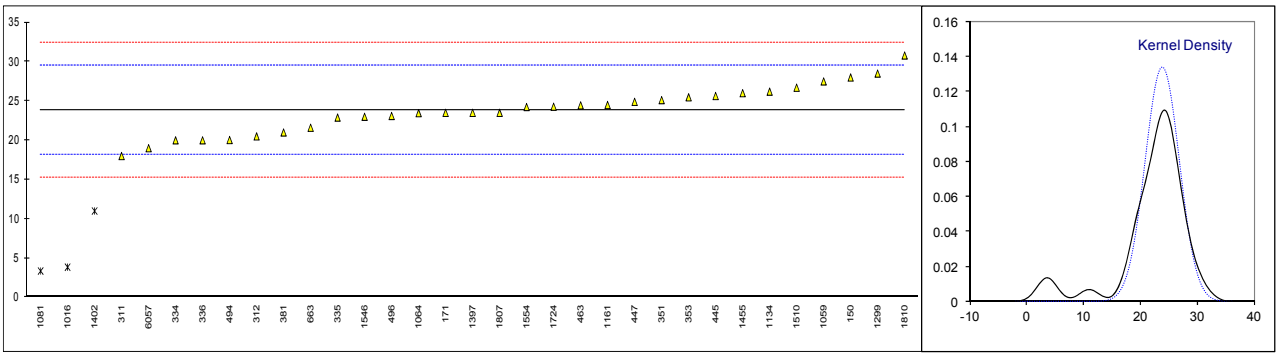




Determination of Total Contamination on sample #17091; result in mg/kg

lab	method	value	mark	z(targ)	Incomplete filtration	Volume used	remarks
120		-----		-----		-----	
150	EN12662:2014	28.0		1.45	NO	-----	
171	EN12662:2014	23.5		-0.12	NO	300	
237		-----		-----		-----	
311	EN12662:2014	18.0		-2.04	YES	300	
312	EN12662:2014	20.5		-1.17	NO	300	
323		-----		-----		-----	
334	EN12662:2014	20		-1.34	NO	300	
335	EN12662:2008	22.9		-0.33		-----	
336	EN12662:2014	20.0		-1.34	NO	-----	
351	EN12662:2014	25.12		0.44	NO	300	
353	IP440	25.48		0.57	NO	404	
381	EN12662:2014	21		-0.99		290	
445	EN12662:1998	25.64		0.63	NO	300	
447	IP440	24.9		0.37	YES	540	
463	EN12662:2014	24.45		0.21	NO	300	
494	EN12662:2014	20.04		-1.33		-----	
496	EN12662:2014	23.1		-0.26	NO	-----	
621		-----		-----		-----	
663	EN12662:2014	21.6		-0.78	YES	248.7	
963		-----		-----		-----	
1016	EN12662:2014	3.85	R(0.01)	-6.97	NO	-----	
1017		-----		-----		-----	
1033		-----		-----		-----	
1059	EN12662:2014	27.5		1.27	NO	303.5	
1064	EN12662:2014	23.46		-0.13	NO	300	
1081	EN12662:2014	3.36	R(0.01)	-7.14	NO	321.2	
1134	EN12662:2014	26.2		0.82		-----	
1161	EN12662:2014	24.5	C	0.23		-----	first reported: 34.7
1299	EN12662:2014	28.5		1.62	NO	-----	
1397	EN12662:2014	23.5		-0.12	NO	300	
1402	EN12662:2008	11.0	R(0.01)	-4.48	NO	-----	
1455	EN12662:2014	26		0.75	NO	350	
1510	EN12662:1998	26.7		0.99		-----	
1546	EN12662:2014	23.0		-0.30		-----	
1554	EN12662:2014	24.2425		0.14	NO	-----	
1724	EN12662:2014	24.28		0.15		-----	
1807	EN12662:2014	23.5		-0.12	NO	300	
1810	EN12662:2014	30.8		2.42	YES	-----	
1984	EN12662:2014	< 12		<-4.13		300	possibly false negative test result?
6057	EN12662:2014	19		-1.69		-----	

normality	OK		
n	30		
outliers	3	spike	recovery
mean (n)	23.847	21.2	<112%
st.dev. (n)	2.9796		
R(calc.)	8.343		
R(EN12662:14)	8.031		



APPENDIX 2

Number of participants per country

1 lab in ARGENTINA
1 lab in AUSTRIA
2 labs in BELGIUM
1 lab in BRAZIL
5 labs in BULGARIA
1 lab in CANADA
3 labs in CROATIA
1 lab in CYPRUS
2 labs in CZECH REPUBLIC
6 labs in FRANCE
3 labs in GERMANY
1 lab in GREECE
1 lab in INDONESIA
1 lab in IRELAND
1 lab in ISRAEL
1 lab in KAZAKHSTAN
1 lab in MALAYSIA
1 lab in MEXICO
6 labs in NETHERLANDS
2 labs in NIGERIA
2 labs in PERU
1 lab in PHILIPPINES
2 labs in PORTUGAL
1 lab in ROMANIA
1 lab in SAUDI ARABIA
1 lab in SERBIA
1 lab in SLOVENIA
4 labs in SPAIN
1 lab in SWEDEN
1 lab in THAILAND
3 labs in TURKEY
7 labs in UNITED KINGDOM
6 labs in UNITED STATES OF AMERICA

APPENDIX 3

Abbreviations

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

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