Results of Proficiency Test
Unused Lubricating Oil
June 2014

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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Report no.: iis14L03 unused

August 2014

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~~1~~ INTRODUCTION

Since 1997, the Institute for Interlaboratory Studies organises every year a proficiency test for Lubricating Oil. In the annual proficiency testing program 2013/2014, it was decided to continue the proficiency test for the analyses of unused Lubricating Oil. In this interlaboratory study, 93 laboratories in 48 different countries have participated. See appendix 3 for the number of participants per country. In this report, the results of the 2014 Lubricating Oil (unused oil) proficiency test are presented and discussed.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organizer of this proficiency test. It was decided to send one bottle of 1L (labelled #14080) of unused Lubricating Oil that was purchased from a local supplier. The analyses for fit-for-use and homogeneity were subcontracted. Participants were requested to report rounded and unrounded results. The unrounded results were preferably used for statistical evaluation.

2.1 ACCREDITATION

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

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3).

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 bulk material (Texaco URSA Premium TDS 10W-40) was obtained from a local supplier. From this 200 litre batch were, after homogenizing, 92 brown glass bottles of 1 litre (labelled #14080) filled. The homogeneity of the subsamples #14080 was checked by determination of Density @15°C in accordance with ASTM D4052 and Kinematic Viscosity @ 40ºC in accordance with ASTM D445 on 8 stratified randomly selected samples.

	Density @ 15 °C in kg/L	Viscosity @40°C in mm^2/s
Sample #14080-1	0.86777	91.48
Sample #14080-2	0.86777	91.49
Sample #14080-3	0.86777	91.48
Sample #14080-4	0.86777	91.46
Sample #14080-5	0.86777	91.48
Sample #14080-6	0.86777	91.50
Sample #14080-7	0.86777	91.51
Sample #14080-8	0.86777	91.49

Table 1: homogeneity test results of subsamples #14080

From the above test results, the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density @ 15 °C in kg/L	Viscosity @40°C in mm^2/s
r (sample #14080)	0.00000	0.04
reference test	ASTM D4052:11	ASTM D445:12
0.3 x R(reference test)	0.00015	0.21

Table 2: evaluation of the repeatabilities of the subsamples #14080

The calculated repeatabilities were less than 0.3 times the corresponding reproducibilities of the reference methods. Therefore, homogeneity of the subsamples #14080 was assumed.

To each of the participating laboratories, 1 sample of 1 L in a brown glass bottle (labelled #14080) was sent on May 21, 2014.

2.5 ANALYSES

The participants were requested to determine on sample #14080: Acid Number (Total), Base Number (Total), Color ASTM, Conradson Carbon Residue, Ramsbottom Carbon Residue, Carbon Residue (Micro method), Density @ 15°C, Flash Point COC, Flash Point PMcc, Kinematic Viscosity @ 40°C and @ 100°C, Viscosity Index, Apparent Viscosity @ -20°C, Viscosity Stabinger @ 40°C and @100ºC, Nitrogen, Pour Point (manual, automated), Sulphated Ash, Sulphur, Water, Calcium, Phosphorus and Zinc.

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

3 RESULTS

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

Directly after the deadline, a reminder fax was sent to those laboratories that had not reported results at that moment.

Shortly after the deadline, the available results were screened for suspect data. A result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the results. Additional or corrected results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ (iis-protocol, April 2014 version 3.3). For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded results. Results reported as ‘<…’ or ‘>…’ were not used in the statistical evaluation.

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either ‘unknown’, ‘OK’, ‘suspect’ or ‘not OK’. After removal of outliers, this check was repeated. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.
In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon, Grubbs and Rosner outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test and by R(0.01) for the Rosner General ESD test (see appendix 3, no.15). Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test and by R(0.05) for the Rosner’s test. Both outliers and stragglers were not included in the calculations of the averages and the standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. When the uncertainty passed the evaluation, no remarks are made in the report. However, when the uncertainty failed the evaluation it is mentioned in the report and it will have consequences for the evaluation of the test results.

Finally, the reproducibilities were calculated from the standard deviations by multiplying them with a factor of 2.8.

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected standard. Outliers and other data, which were excluded from the calculations, are represented as a "x". 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 (see appendix 3; nos.13 and 14). Also a normal Gauss curve was projected over the Kernel Density Graph.

3.3 Z-SCORES

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

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

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

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

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

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

4 EVALUATION

In this interlaboratory study, problems with sample despatch were encountered due to several problems. Twenty participants reported after the final reporting date and six participants did not report any test results at all. Not all laboratories were able to report all analyses requested. In total 87 participants reported 996 test results. Observed were 20 outlying results, which is 2.0%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

In this section, the results are discussed per sample and per test. The specified test methods and requirements were taken into account for explaining the observed differences when possible and applicable. These methods are also in the tables together with the reported data. The abbreviations, used in these tables, are listed in appendix 3.
In the iis PT reports, ASTM methods are referred to with a number (e.g. D2086) and an added designation for the year that the method was adopted or revised (e.g. D2086-08). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D2086-08 (2013)). In the results tables of Appendix 1 only the method number and year of adoption or revision will be used.

The majority of the data sets proved to have a normal distribution. For some other tests the number of reported test results was too small to determine whether the data set was normally distributed. In these cases the results of the statistical evaluations should be used with care.

Acid Number (total): This determination was very problematic. No statistical outliers were observed. The test results of three laboratories that reported to have used ASTM D974 were excluded because this test method is not equivalent to ASTM D664. The calculated reproducibility after rejection of the suspect data is not at all agreement with the requirements of ASTM D664:11a.
In Table 1 of ASTM D664:11a the recommended size of the test portion is given. Results using smaller sample size may not be equivalent to results obtained with the recommended sample size (See note 13 of ASTM D664:11a).

Base Number (total): This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D2896:11.
One laboratory reported to have used IP400 and another laboratory reported to have used ASTM D4739. Both methods are not equivalent to ASTM D2896:11.

Color: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with ASTM D1500:12.

Conradson CR: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility is in agreement with the requirements of ASTM D189:06(2010).

Ramsbottom CR: This determination was very problematic. No statistical outliers were observed. However, the calculated reproducibility is not at all in agreement with the requirements of ASTM D524:10. The low number of results may (partly) explain the observed large spread.

Carbon Residue (Micro method) This determination was problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the requirements of ASTM D4530:11.

Density @ 15°C: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers, is not in agreement with the requirements of ASTM D4052:11.

Flash Point COC: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D92:12.

Flash Point PMcc: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with ASTM D93-A:13e.
Remarkably 3 laboratories reported to have used ASTM D93, procedure B. This method B may not applicable for unused lubricating oils. One laboratory reported an unrealistic run time that does not match with procedure B. Use of procedure A (temperature increase rate of 5° to 6°C per min) should give shorter run times then when procedure B (temperature rate 1° to 1.6°C per min) was used.

Kin.Visco.@ 40°C: This determination was problematic. Two statistical outliers were observed and two test results were excluded from statistical evaluation, as the reported test method is not equivalent to ASTM D445. The calculated reproducibility after rejection of the suspect data is not in agreement with the (strict) requirements of ASTM D445:12. A number of laboratories may have used a Canon Fenske Routine Viscometer instead of an Ubbelohde Viscometer. This may (partly) explain the large spread.

Kin.Visco.@ 100°C: This determination was very problematic. Three statistical outliers were observed and two test results were excluded from statistical evaluation, as the reported test method is not equivalent to ASTM D445. The calculated reproducibility after rejection of the suspect data is not at all in agreement with the strict requirements of ASTM D445:12. A number of laboratories may have used a Canon Fenske Routine Viscometer instead of an Ubbelohde Viscometer. This may (partly) explain the large spread.

Viscosity Index This determination was very problematic. No statistical outliers were observed but two test results were excluded because these results probably contained a calculation error. The calculated reproducibility after rejection of the two suspect test results is not at all in agreement with the requirements of ASTM D2270:10.
One originally reported test result of laboratory 496 was not recalculated after reporting revised viscosity test result for kinematic viscosity @ 40°C. Using the corrected test result in the formula gives the right Viscosity Index.

Apparent Viscosity @ -20°C This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D5293:14 for both the constant cooling instruments and the electrically cooled instruments. The reproducibility for thermo electrically cooled instruments was used for the statistical evaluation.

Visco. Stabinger at 40ºC This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D7042:12a.

Visco. Stabinger at 100ºC This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements ASTM D7042:12a.

Nitrogen: This determination was very problematic. No statistical outliers were observed. Three test results were excluded before the statistical evaluation as the used test method ASTM D4629 is not applicable for high viscosity liquids, nor for liquids containing more than 100 mg/kg nitrogen.
The calculated reproducibility after rejection of the suspect data is not at all in agreement with the requirements of ASTM D3228:08 and ASTM D5762:11.

Pour Point (manual): This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements ASTM D97:12. Remarkably one laboratory reported to have used ASTM D5950 which is an automatic test method. This test result was excluded from the statistical evaluation and was evaluated under the automatic method. The calculated reproducibility is in agreement with the requirements ASTM D97:12.

Pour Point (automated): This determination was not problematic. One statistical outlier was observed and one laboratory reported to have used ISO3016 which is manual test method. The calculated reproducibility after rejection of the suspect data is in full agreement with ASTM D5950:12. Four laboratories reported to have used test method ASTM D7346 which is not equivalent to ASTM 5950.

Sulphated Ash: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D874:13a.

Sulphur: This determination was very problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not at all agreement with the requirements of ASTM D2622:10.
A matrix mismatch between sample and standards (e.g. different C/H ratio and/or the presence of interfering molecules) may (partly) explain the large spread. When the ASTM D2622:10 data was evaluated separately, the calculated reproducibility is much smaller but still not at all in agreement with the requirements of ASTM D2622:10.

Water: This determination was very problematic for the majority of the laboratories. The preferred method to use for a product containing interfering components may be ASTM D6304:07 method C. This method is applicable for oils with difficult matrix interferences only. Twenty-one laboratories reported results determined according ASTM D6304 method C. These test results were all lower than the average of all test results, which suggests that the low average may be more reliable than the higher results, which is in agreement with the low solubility of water in lube oil. After excluding all results, except ASTM D6304-C, the calculated reproducibility is in agreement with the requirements of ASTM D6304:07.

Calcium: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D5185:09.

Phosphorus: This determination was problematic. The consensus value of (1158 mg/kg Phosphorus) is above the upper limit of the calibration range (10 – 1000 mg/kg). According to ASTM D5185:13e (§1.5) appropriate dilutions will not give degradation of the precision.
Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D5185:13e.

Zinc: This determination was problematic. Only one statistical outlier was observed and one test result was excluded as the test result was reported in a deviating unit. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ASTM D5185:09.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant standard and the reproducibility as found for the group of participating laboratories that participated. The average results, calculated reproducibilities and reproducibilities derived from literature standards (in casu ASTM, ISO and IP standards), are compared in the next table.

Parameter	unit	n	Average	2.8 * sd	R(lit)
Total Acid Number	mg KOH/g	48	4.15	3.03	0.73
Total Base Number	mg KOH/g	48	16.0	0.86	1.12
Color		36	2.9	0.5	1.0
Conradson Carbon Residue	%M/M	18	1.72	0.23	0.36
Ramsbottom Carbon Residue	%M/M	7	1.56	0.72	0.20
Carbon Residue (micro method)	%M/M	31	1.81	0.31	0.23
Density @ 15 °C	kg/L	76	0.8678	0.0008	0.0005
Flash Point COC	^{o}C	48	230.6	17.8	18.0
Flash Point PMcc	^{o}C	57	208.1	12.2	14.8
Kinematic Viscosity @ 40 °C	mm^2/s	74	91.59	1.07	0.70
Kinematic Viscosity @ 100 °C	mm^2/s	66	13.80	0.23	0.10
Viscosity Index		64	153.6	3.8	2.0
Apparent Viscosity @ -20 °C	mPa·s	15	3758	217	225
Stabinger Viscosity @ 40 °C	mm^2/s	21	91.43	1.39	1.11
Stabinger Viscosity @ 100 °C	mm^2/s	21	13.84	0.15	0.14
Nitrogen	mg/kg	9	844.3	523.6	200.0
Pour Point, manual	^{o}C	46	-32.5	7.7	9.0
Pour Point, automated	^{o}C	26	-35.0	4.6	4.5
Sulphated Ash	%M/M	34	1.91	0.23	0.33
Sulphur	%M/M	36	0.31	0.17	0.03
Water	mg/kg	21	226.4	381.4	437.2
Calcium	mg/kg	48	4782	860	911
Phosphorus	mg/kg	43	1158	236	146
Zinc	mg/kg	48	1319	350	225

Table 3: reproducibilities of results of sample #14080 and comparisons with targets

Without further statistical calculations it can be concluded that for a number of tests there is a not a good compliance of the group of participants with the relevant standards. The tests that are problematic have been discussed in paragraph 4.1.

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

	June 2014	May 2013	May 2012	May 2011
Number of reporting labs	87	78	78	96
Number of results reported	996	879	804	985
Statistical outliers	20	29	33	52
Percentage outliers	2.0%	3.3%	4.1%	5.3%

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 standards. The conclusions are given the following table:

Determination	June 2014	May 2013	May 2012	May 2011
Total Acid Number	--	--	+/-	--
Total Base Number	+	-	--	++
Color	++	++	++	++
Conradson Carbon Residue	+	++	-	++
Ramsbottom Carbon Residue	--	--	-	n.e.
Carbo Residue (Micro method)	-	+		
Density @ 15 °C	--	--	-	--
Flash Point COC	+/-	+	+/-	++
Flash Point PMcc	+	++	++	++
Kinematic Viscosity @ 40 °C	-	-	-	--
Kinematic Viscosity @ 100 °C	--	--	--	--
Viscosity Index -20 °C	--	--	n.e.	n.e.
Apparent Viscosity	+	+	n.e.	n.e.
Stabinger Viscosity @ 40 °C	-	--	--	--
Stabinger Viscosity @ 100 °C	+/-	--	--	n.e.
Nitrogen	--	-	--	--
Pour Point, manual	+	-	+/-	++
Pour Point, automated	+/-	+	-	+/-
Sulphated Ash	+	-	--	++
Sulphur	--	--	--	--
Water	+	+	++	++
Calcium	+	-	--	+/-
Phosphorus	-	-	--	--
Zinc	-	-	-	--

Table 5: comparison determinations against the standard

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

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

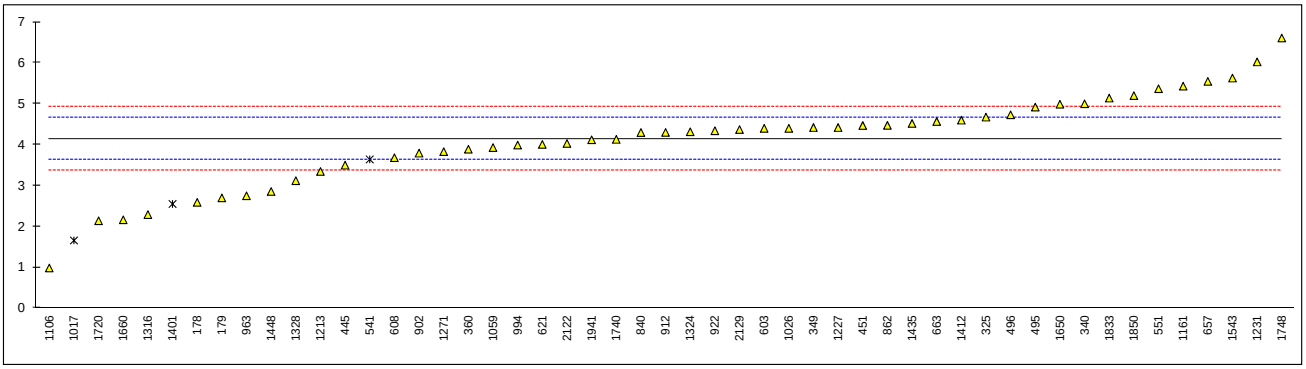
APPENDIX 1

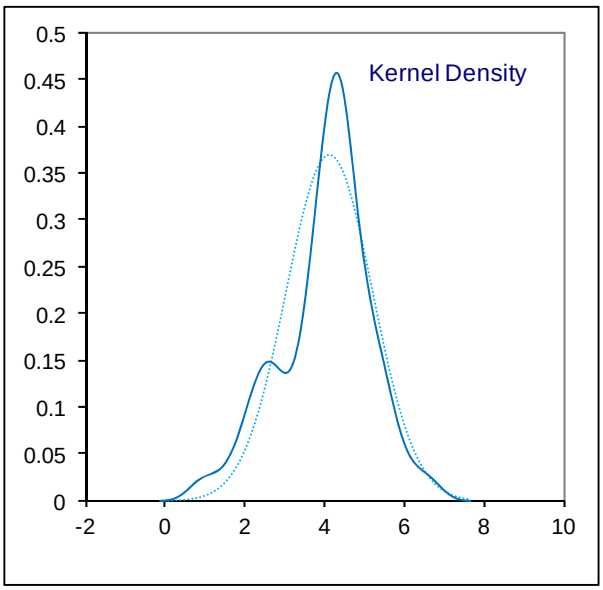
Determination of Acid Number (Total) on sample #14080; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178	D664	2.59		-6.00	
179	D664	2.7		-5.58	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325	D664	4.675		2.04	
333		-----		-----	
340	D664	5		3.30	
349	D664	4.42		1.06	
353		-----		-----	
360	D664	3.89		-0.99	
432		-----		-----	
445	D664	3.500		-2.49	
446		-----		-----	
450		-----		-----	
451	D664	4.470		1.25	
473		-----		-----	
495	D664	4.92		2.99	
496	D664	4.730		2.25	
541	D974	3.64	ex	-1.95	result excluded, see §4.1
551	D664	5.37	C	4.72	first reported:1.171
603	D664	4.4		0.98	
608	D664	3.681		-1.79	
614		-----		-----	
621	D664	4.008		-0.53	
657	D664	5.55		5.42	
663	D664	4.567		1.62	
840	D664	4.298		0.59	
862	D664	4.4725		1.26	
875		-----		-----	
886		-----		-----	
902	D664	3.794		-1.36	
912	D664	4.3		0.59	
922	D664	4.341		0.75	
963	D664	2.75		-5.39	
974		-----		-----	
994	D664	3.99		-0.60	
1013		-----		-----	
1017	D974	1.659	C, ex	-9.60	first reported:1.684, result excluded, see §4.1
1023	in house	<0.07		<-15.41	false negative test result?
1026	D664	4.4		0.98	
1059	ISO6619	3.93		-0.83	
1106	D664	0.9844		-12.20	
1146		-----		-----	
1161	D664	5.432		4.96	
1173		-----		-----	
1201		-----		-----	
1213	D664	3.345		-3.09	
1227	D664	4.42		1.06	
1231	D664	6.025		7.25	
1235		-----		-----	
1271	D664	3.830		-1.22	
1316	D664	2.29		-7.16	
1324	D664	4.316		0.66	
1328	GB/T4945	3.12		-3.96	
1401	D974	2.55	ex	-6.16	result excluded, see §4.1
1412	D664	4.60		1.75	
1423		-----		-----	
1435	D664	4.52		1.44	
1448	D664	2.8562		-4.98	
1460		-----		-----	
1543	D664	5.63		5.73	
1564		-----		-----	
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622		-----		-----	

1650	D664	4.99	3.26
1660	D664	2.163	-7.65
1720	D664	2.14	-7.74
1722		-----	-----
1730		-----	-----
1740	D664	4.13	-0.06
1748	D664	6.61	9.51
1797		-----	-----
1799		-----	-----
1833	D664	5.14	3.84
1842		-----	-----
1850	ISO6619	5.20	4.07
1871		-----	-----
1872		-----	-----
1874		-----	-----
1877		-----	-----
1915		-----	-----
1941	ISO6619	4.12	-0.10
2122	IP177	4.03	-0.45
2129	D664	4.37	0.86
9101		-----	-----

normality	OK
n	48
outliers	0 + 3 excl
mean (n)	4.146
st.dev. (n)	1.0828
R(calc.)	3.032
R(D664:11a)	0.726



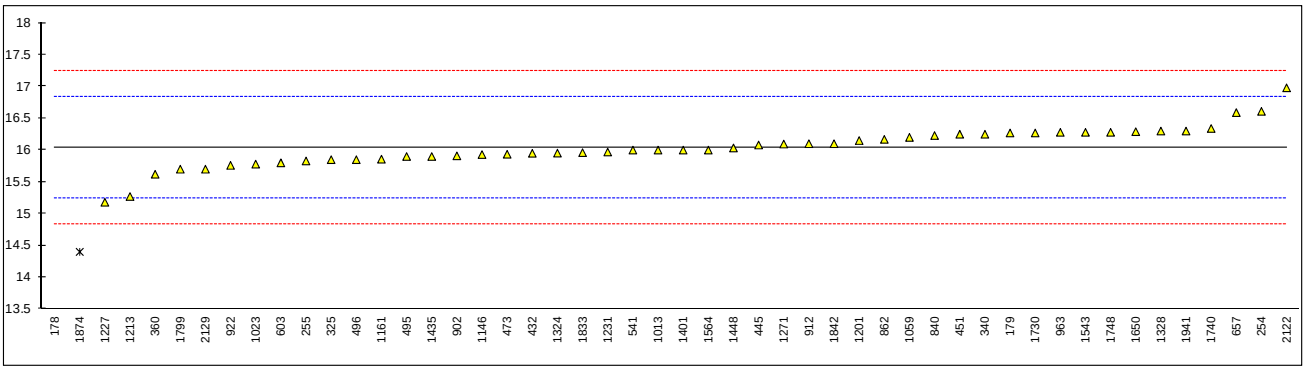


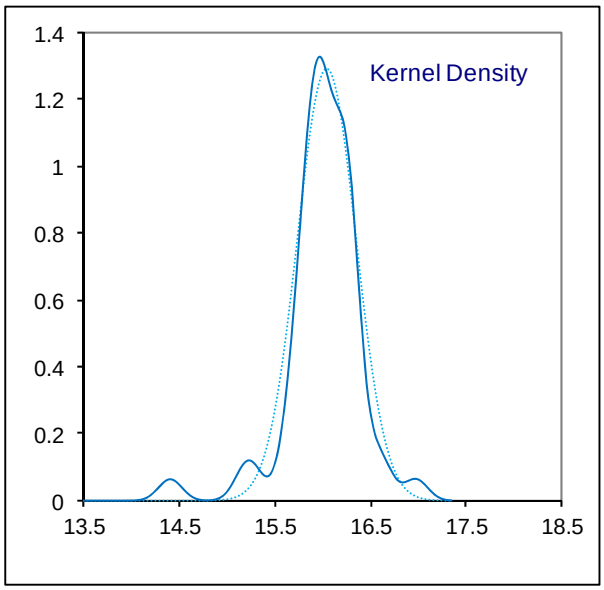
Determination of Base Number (Total) on sample #14080; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178	D2896	11.55	R(0.01)	-11.20	
179	D2896	16.27		0.57	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254	D2896	16.61		1.41	
255	D2896	15.83	C	-0.53	first reported:19.984
256		-----		-----	
315		-----		-----	
325	D2896	15.85		-0.48	
333		-----		-----	
340	D2896	16.25		0.52	
349		-----		-----	
353		-----		-----	
360	D2896	15.62		-1.05	
432	D2896	15.95		-0.23	
445	D2896	16.08		0.09	
446		-----		-----	
450		-----		-----	
451	D2896Mod.	16.25		0.52	
473	D2896	15.9346		-0.27	
495	D2896	15.9		-0.36	
496	D2896	15.85		-0.48	
541	D2896	16.0		-0.11	
551		-----		-----	
603	D2896	15.8		-0.61	
608		-----		-----	
614		-----		-----	
621		-----		-----	
657	D2896	16.59		1.36	
663		-----		-----	
840	D2896	16.23		0.47	
862	D2896	16.1686		0.31	
875		-----		-----	
886		-----		-----	
902	D2896	15.91		-0.33	
912	D2896	16.1		0.14	
922	D2896	15.76		-0.70	
963	D2896	16.28		0.59	
974		-----		-----	
994		-----		-----	
1013	D2896	16.0		-0.11	
1017		-----		-----	
1023	D2896	15.78		-0.66	
1026		-----		-----	
1059	ISO3771	16.2		0.39	
1106		-----		-----	
1146	D2896	15.93		-0.28	
1161	D2896	15.858		-0.46	
1173		-----		-----	
1201	D2896	16.15		0.27	
1213	D2896	15.27		-1.93	
1227	D2896	15.18		-2.15	
1231	D2896	15.97		-0.18	
1235		-----		-----	
1271	ISO3771	16.095		0.13	
1316		-----		-----	
1324	D2896	15.953		-0.22	
1328	SH/T0251	16.3		0.64	
1401	D2896	16.00		-0.11	
1412		-----		-----	
1423		-----		-----	
1435	D2896	15.90		-0.36	
1448	D2896	16.0340		-0.02	
1460		-----		-----	
1543	D4739	16.28	C	0.59	first reported: 16.58, see §4.1
1564	D2896	16.0		-0.11	
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622		-----		-----	
1650	D2896	16.29		0.62	
1660		-----		-----	

1720		-----		-----	
1722		-----		-----	
1730	D2896	16.27		0.57	
1740	D2896	16.34		0.74	
1748	D2896	16.28		0.59	
1797		-----		-----	
1799	D2896	15.70		-0.85	
1833	D2896	15.960		-0.21	
1842	IP276	16.1		0.14	
1850		-----		-----	
1871		-----		-----	
1872		-----		-----	
1874	E2412	14.4	R(0.01)	-4.10	
1877		-----		-----	
1915		-----		-----	
1941	ISO3771	16.3		0.64	
2122	IP400	16.97872		2.33	see §4.1
2129	D2896	15.70		-0.85	
9101		-----		-----	

normality	not OK
n	48
outliers	2
mean (n)	16.043
st.dev. (n)	0.3084
R(calc.)	0.864
R(D2896:11)	1.123



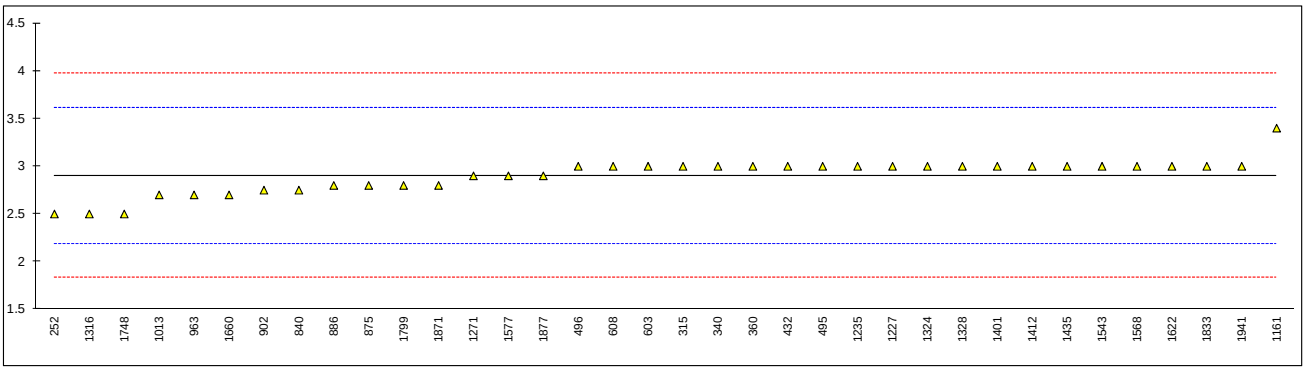


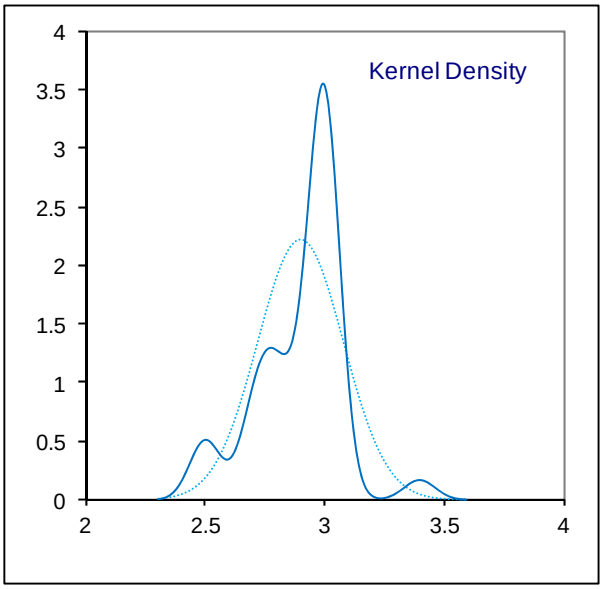
Determination of Color on sample #14080

lab	method	value	mark	z(targ)	Remarks
173	D1500	L3.0		-----	
178		-----		-----	
179	D1500	L3.5		-----	
237		-----		-----	
238		-----		-----	
252	D1500	2.5		-1.12	
254	D1500	L3.0		-----	
255		-----		-----	
256	D1500	L3.0		-----	
315	D1500	3		0.28	
325	D6045	L3.0		-----	
333		-----		-----	
340	D1500	3		0.28	
349		-----		-----	
353		-----		-----	
360	D1500	3.0		0.28	
432	D1500	3		0.28	
445	D1500	L3.0		-----	
446	D1500	L3.0		-----	
450		-----		-----	
451		-----		-----	
473		-----		-----	
495	D1500	3.0		0.28	
496	D1500	3.0		0.28	
541	D1500	L 3.0		-----	
551	D1500	L2.0		-----	
603	D1500	3.0		0.28	
608	D1500	3		0.28	
614	D1500	L3.0		-----	
621	D1500	L3.0		-----	
657	D1500	L3.0		-----	
663	D1500	L3.0		-----	
840	D1500	2.75		-0.42	
862	D1500	L3.0		-----	
875	D6045	2.8		-0.28	
886	D1500	2.8		-0.28	
902	D1500	2.75		-0.42	
912	D1500	L3.0		-----	
922	D1500	L3.0		-----	
963	D1500	2.7		-0.56	
974	D1500	L3.0		-----	
994	D1500	L3.0		-----	
1013	D1500	2.7		-0.56	
1017		-----		-----	
1023		-----		-----	
1026	D1500	L3.0		-----	
1059	D1500	L3,0		-----	
1106		-----		-----	
1146		-----		-----	
1161	D1500	3.4		1.40	
1173		-----		-----	
1201	D1500	L3.0		-----	
1213	D1500	L3.0		-----	
1227	D1500	3		0.28	
1231	D1500	L3.0		-----	
1235	ISO2049	3.0		0.28	
1271	D1500	2.9		0.00	
1316	D1500	2.5		-1.12	
1324	D1500	3		0.28	
1328	GB/T6540	3.0		0.28	
1401	D1500	3.0		0.28	
1412	D1500	3.0		0.28	
1423		-----		-----	
1435	D1500	3.0		0.28	
1448		-----		-----	
1460		-----		-----	
1543	D1500	3.0		0.28	
1564	D1500	L3		-----	
1568	D1500	3.0		0.28	
1570		-----		-----	
1577	D1500	2.9		0.00	
1622	D1500	3.0		0.28	
1650		-----		-----	
1660	D1500	2.7		-0.56	

1720		-----	-----
1722		-----	-----
1730	D1500	L2.5	-----
1740	D1500	L3.0	-----
1748	D1500	2.5	-1.12
1797		-----	-----
1799	D6045	2.8	-0.28
1833	D1500	3.0	0.28
1842		-----	-----
1850	D1500	L2.5	-----
1871	D1500	2.8	-0.28
1872		-----	-----
1874		-----	-----
1877	D6045	2.9	0.00
1915		-----	-----
1941	ISO2049	3.0	0.28
2122		-----	-----
2129	D1500	L3.0	-----
9101		-----	-----

normality	suspect
n	36
outliers	0
mean (n)	2.90
st.dev. (n)	0.180
R(calc.)	0.50
R(D1500:12)	1.00



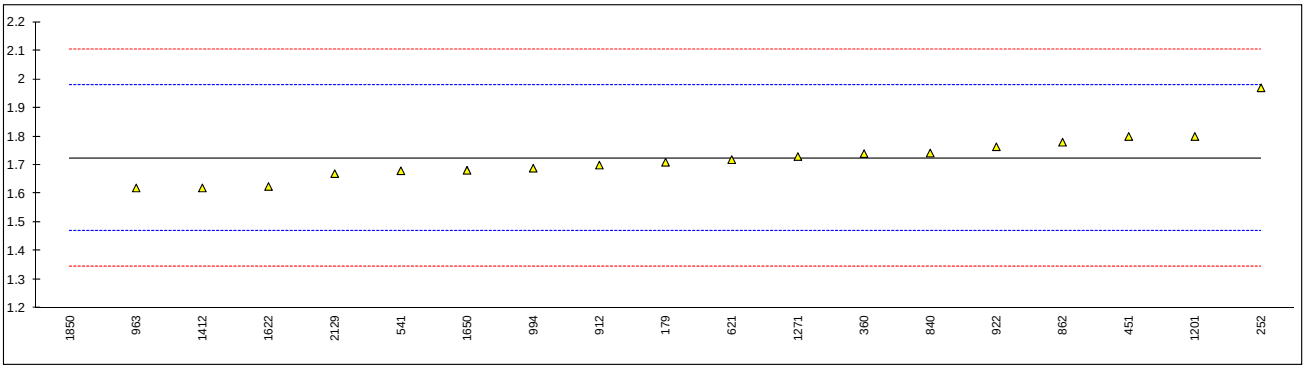


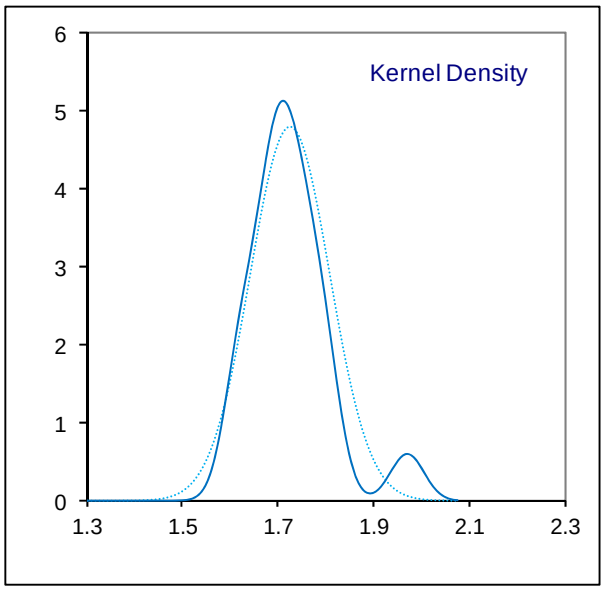
Determination of Conradson Carbon Residue on sample #14080; results in %M/M

lab	method	value	mark	z(targ)	Remarks
173		-----		-----	
178		-----		-----	
179	D189	1.71		-0.11	
237		-----		-----	
238		-----		-----	
252	D189	1.97		1.93	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325		-----		-----	
333		-----		-----	
340		-----		-----	
349		-----		-----	
353		-----		-----	
360	D189	1.74		0.12	
432		-----		-----	
445		-----		-----	
446		-----		-----	
450		-----		-----	
451	D189	1.80		0.59	
473		-----		-----	
495		-----		-----	
496		-----		-----	
541	D189	1.68		-0.35	
551		-----		-----	
603		-----		-----	
608		-----		-----	
614		-----		-----	
621	D189	1.719		-0.04	
657		-----		-----	
663		-----		-----	
840	D189	1.742		0.14	
862	D189	1.780		0.44	
875		-----		-----	
886		-----		-----	
902		-----		-----	
912	D189	1.70		-0.19	
922	D189	1.764		0.31	
963	D189	1.62		-0.82	
974		-----		-----	
994	D189	1.689		-0.28	
1013		-----		-----	
1017		-----		-----	
1023		-----		-----	
1026		-----		-----	
1059		-----		-----	
1106		-----		-----	
1146		-----		-----	
1161		-----		-----	
1173		-----		-----	
1201	D189	1.80		0.59	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1235		-----		-----	
1271	D189	1.73		0.04	
1316		-----		-----	
1324		-----		-----	
1328		-----		-----	
1401		-----		-----	
1412	D189	1.62		-0.82	
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564		-----		-----	
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622	D189	1.6252		-0.78	
1650	D189	1.682		-0.33	
1660		-----		-----	

1720		-----		-----	
1722		-----		-----	
1730		-----		-----	
1740		-----		-----	
1748		-----		-----	
1797		-----		-----	
1799		-----		-----	
1833		-----	W	-----	result withdrawn, first reported: 2.3
1842		-----		-----	
1850	D189	0.66	G(0.01)	-8.39	
1871		-----		-----	
1872		-----		-----	
1874		-----		-----	
1877		-----		-----	
1915		-----		-----	
1941		-----		-----	
2122		-----		-----	
2129	D189	1.67		-0.43	
9101		-----		-----	

normality	not OK
n	18
outliers	1
mean (n)	1.725
st.dev. (n)	0.0831
R(calc.)	0.233
R(D189:06)	0.355



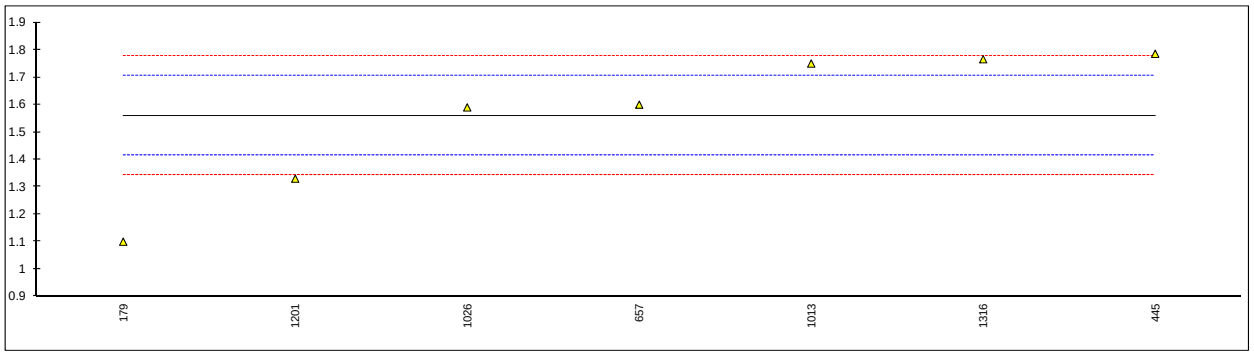


Determination of Ramsbottom Carbon Residue on sample #14080; results in %M/M

lab	method	value	mark	z(targ)	Remarks
173		-----		-----	
178		-----		-----	
179	D524	1.1		-6.37	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325		-----		-----	
333		-----		-----	
340		-----		-----	
349		-----		-----	
353		-----		-----	
360		-----		-----	
432		-----		-----	
445	IP14	1.7857		3.12	
446		-----		-----	
450		-----		-----	
451		-----		-----	
473		-----		-----	
495		-----		-----	
496		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
608		-----		-----	
614		-----		-----	
621		-----		-----	
657	D524	1.6		0.55	
663		-----		-----	
840		-----		-----	
862		-----		-----	
875		-----		-----	
886		-----		-----	
902		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
994		-----		-----	
1013	D524	1.75		2.63	
1017		-----		-----	
1023		-----		-----	
1026	D524	1.59		0.41	
1059		-----		-----	
1106		-----		-----	
1146		-----		-----	
1161		-----		-----	
1173		-----		-----	
1201	D524	1.33		-3.18	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1235		-----		-----	
1271		-----		-----	
1316	D524	1.7656		2.84	
1324		-----		-----	
1328		-----		-----	
1401		-----		-----	
1412		-----		-----	
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564		-----		-----	
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622		-----		-----	
1650		-----		-----	
1660		-----		-----	

1720	-----		-----	
1722	-----		-----	
1730	-----		-----	
1740	-----		-----	
1748	-----		-----	
1797	-----		-----	
1799	-----		-----	
1833	-----	W	-----	result withdrawn, first reported:1.78
1842	-----		-----	
1850	-----		-----	
1871	-----		-----	
1872	-----		-----	
1874	-----		-----	
1877	-----		-----	
1915	-----		-----	
1941	-----		-----	
2122	-----		-----	
2129	-----		-----	
9101	-----		-----	

normality	unknown
n	7
outliers	0
mean (n)	1.560
st.dev. (n)	0.2570
R(calc.)	0.720
R(D524:10)	0.202

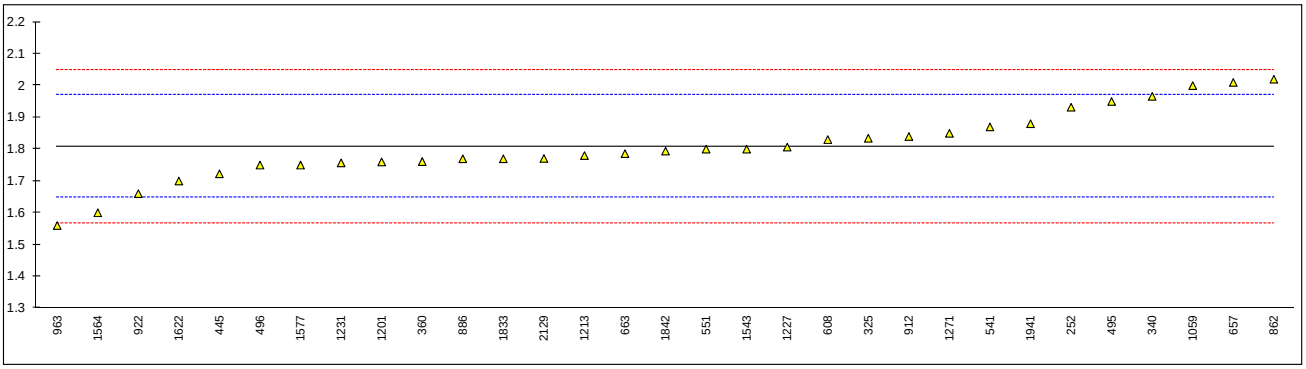


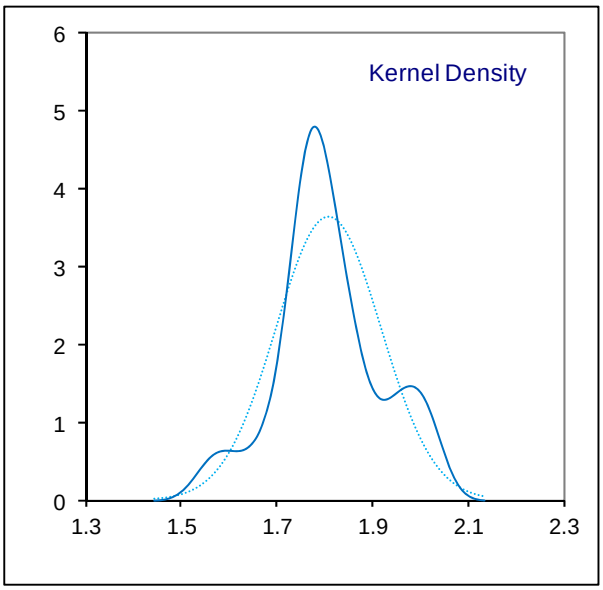
Determination of Carbon Residue (micro method) on sample #14080; results in %M/M

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179		-----		-----	
237		-----		-----	
238		-----		-----	
252	D4530	1.932		1.53	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325	D4530	1.8345		0.32	
333		-----		-----	
340	D4530	1.966		1.95	
349		-----		-----	
353		-----		-----	
360	D4530	1.761		-0.60	
432		-----		-----	
445	D4530	1.7225		-1.08	
446		-----		-----	
450		-----		-----	
451		-----		-----	
473		-----		-----	
495	D4530	1.95		1.75	
496	D4530	1.75		-0.73	
541	D4530	1.87		0.76	
551	D4530	1.80	C	-0.11	first reported:1.04
603		-----		-----	
608	D4530	1.83		0.26	
614		-----		-----	
621		-----		-----	
657	D4530	2.01		2.50	
663	D4530	1.786		-0.29	
840		-----		-----	
862	D4530	2.020		2.62	
875		-----		-----	
886	D4530	1.77		-0.49	
902		-----		-----	
912	D4530	1.84		0.38	
922	D4530	1.66		-1.85	
963	D4530	1.56		-3.10	
974		-----		-----	
994		-----		-----	
1013		-----		-----	
1017		-----		-----	
1023		-----		-----	
1026		-----		-----	
1059	ISO10370	2.00		2.38	
1106		-----		-----	
1146		-----		-----	
1161		-----		-----	
1173		-----		-----	
1201	D4530	1.76		-0.61	
1213	D4530	1.78		-0.36	
1227	D4530	1.8066		-0.03	
1231	D4530	1.757		-0.65	
1235		-----		-----	
1271	D4530	1.85		0.51	
1316		-----		-----	
1324		-----		-----	
1328		-----		-----	
1401		-----		-----	
1412		-----		-----	
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543	D4530	1.8		-0.11	
1564	D4530	1.6		-2.60	
1568		-----		-----	
1570		-----		-----	
1577	D4530	1.750		-0.73	
1622	D4530	1.70		-1.36	
1650		-----		-----	
1660		-----		-----	

1720		-----	-----
1722		-----	-----
1730		-----	-----
1740		-----	-----
1748		-----	-----
1797		-----	-----
1799		-----	-----
1833	D4530	1.77	-0.49
1842	D4530	1.794	-0.19
1850		-----	-----
1871		-----	-----
1872		-----	-----
1874		-----	-----
1877		-----	-----
1915		-----	-----
1941	ISO10370	1.88	0.88
2122		-----	-----
2129	IP398	1.771	-0.47
9101		-----	-----

normality	OK
n	31
Outliers	0
mean (n)	1.809
st.dev. (n)	0.1098
R(calc.)	0.307
R(D4530:11)	0.225



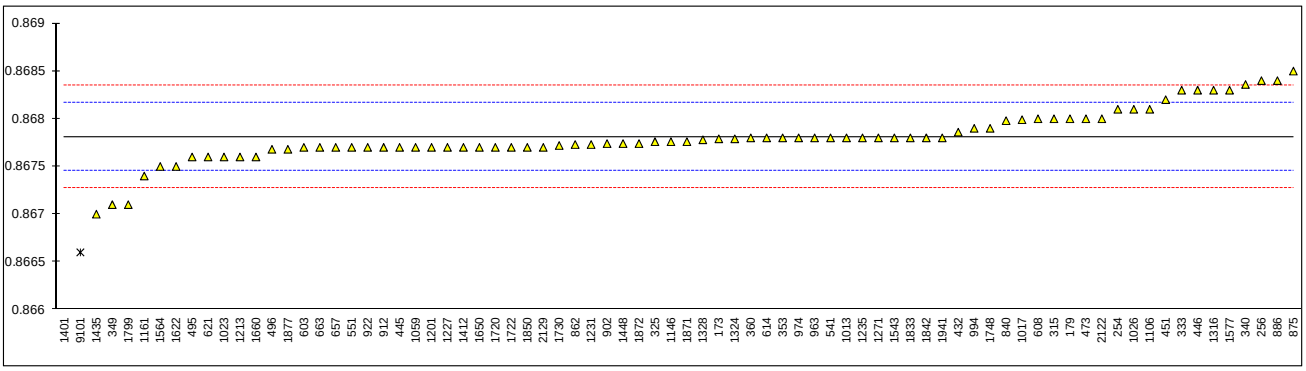


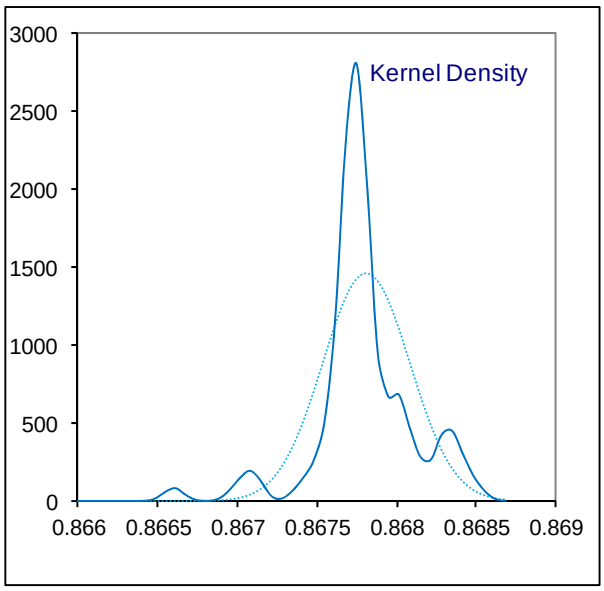
Determination of Density @ 15°C on sample #14080; results in kg/L

lab	Method	value	mark	z(targ)	Remarks
173	D4052	0.86779		-0.12	
178		-----		-----	
179	D4052	0.8680		1.06	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254	D4052	0.8681		1.62	
255		-----		-----	
256	D4052	0.8684		3.30	
315	D4052	0.8680		1.06	
325	D4052	0.86776		-0.28	
333	D4052	0.8683		2.74	
340	D4052	0.86836		3.08	
349	D4052	0.8671	C	-3.98	first reported:0.8688
353	IP365	0.8678		-0.06	
360	D4052	0.8678		-0.06	
432	D4052	0.86786		0.28	
445	D4052	0.8677		-0.62	
446	D4052	0.8683		2.74	
450		-----		-----	
451	D4052	0.8682		2.18	
473	D4052	0.8680		1.06	
495	D4052	0.8676		-1.18	
496	D4052	0.86768		-0.73	
541	D4052	0.8678		-0.06	
551	D4052	0.8677		-0.62	
603	D4052	0.8677		-0.62	
608	D4052	0.8680		1.06	
614	D4052	0.8678		-0.06	
621	D1298	0.8676		-1.18	
657	D4052	0.8677		-0.62	
663	D4052	0.8677		-0.62	
840	D4052	0.86798		0.95	
862	D4052	0.86773		-0.45	
875	D4052	0.8685		3.86	
886	D4052	0.8684		3.30	
902	D4052	0.86774		-0.40	
912	D4052	0.8677		-0.62	
922	D4052	0.8677		-0.62	
963	D4052	0.8678		-0.06	
974	D4052	0.8678		-0.06	
994	D4052	0.8679		0.50	
1013	D4052	0.8678		-0.06	
1017	D4052	0.86799		1.00	
1023	D4052	0.8676		-1.18	
1026	D4052	0.8681	C	1.62	probably unit error, reported: 868.1 kg/L
1059	ISO12185	0.8677		-0.62	
1106	D5002	0.8681	C	1.62	probably unit error, reported: 868.1 kg/L
1146	D4052	0.86776		-0.28	
1161	ISO3675	0.8674	C	-2.30	probably unit error, reported: 867.4 kg/L
1173		-----		-----	
1201	D4052	0.8677		-0.62	
1213	D4052	0.86760	C	-1.18	first reported:0.86667
1227	D4052	0.8677		-0.62	
1231	D4052	0.86773		-0.45	
1235	ISO12185	0.8678		-0.06	
1271	D4052	0.8678	C	-0.06	probably unit error, reported: 867.8 kg/L
1316	D4052	0.8683	C	2.74	first reported:868.3
1324	D4052	0.86779		-0.12	
1328	SHT/T064	0.86778		-0.17	
1401	D4052	0.8518	R(0.01)	-89.66	
1412	D4052	0.8677		-0.62	
1423		-----		-----	
1435	D4052	0.867		-4.54	
1448	D4052	0.86774		-0.40	
1460		-----		-----	
1543	D4052	0.8678	C	-0.06	first reported:0.8681
1564	D4052	0.8675		-1.74	
1568		-----		-----	
1570		-----		-----	
1577	D4052	0.8683		2.74	
1622	D4052	0.8675		-1.74	
1650	D4052	0.8677		-0.62	
1660	D7042	0.8676		-1.18	

1720	D4052	0.8677	C	-0.62	probably unit error, reported:867.7kg/L
1722	D4052	0.8677		-0.62	
1730	D4052	0.86772		-0.51	
1740		-----		-----	
1748	D4052	0.8679		0.50	
1797		-----		-----	
1799	D7042	0.8671		-3.98	
1833	D4052	0.8678		-0.06	
1842	IP365	0.8678		-0.06	
1850	D4052	0.8677		-0.62	
1871	ISO12185	0.86776		-0.28	
1872	ISO12185	0.86774		-0.40	
1874		-----		-----	
1877	D4052	0.86768		-0.73	
1915		-----		-----	
1941	D4052	0.8678		-0.06	
2122	in house	0.8680		1.06	
2129	D4052	0.8677		-0.62	
9101	D1298	0.8666	R(0.01)	-6.78	

normality	suspect
n	76
outliers	2
mean (n)	0.86781
st.dev. (n)	0.000274
R(calc.)	0.00077
R(D4052:11)	0.00050



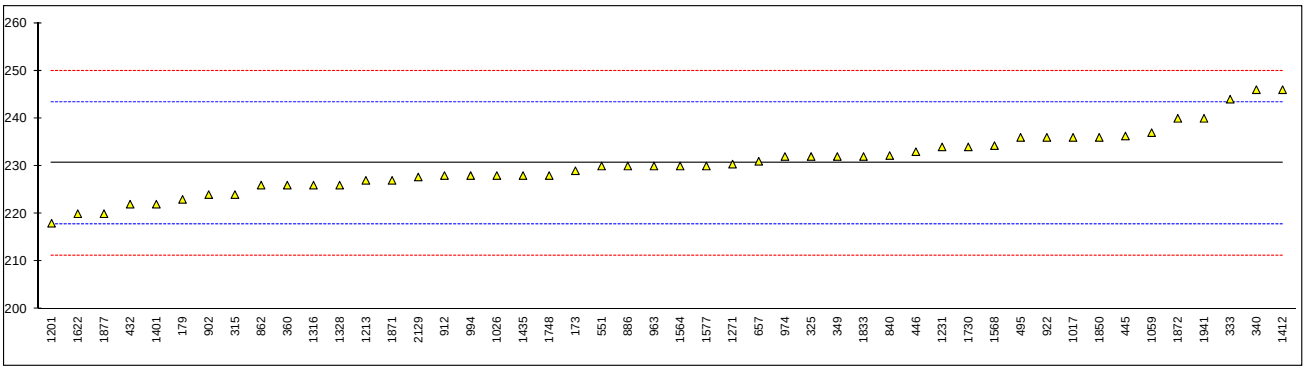


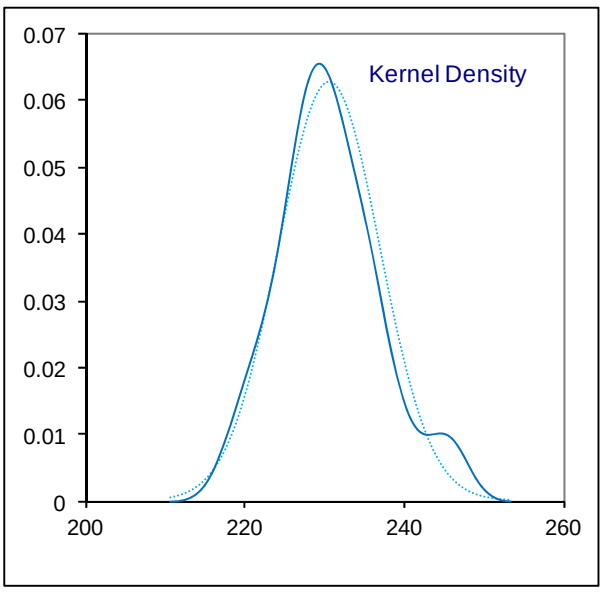
Determination of Flash Point C.O.C. on sample #14080; results in °C

lab	method	value	mark	z(targ)	remarks
173	D92	229.0		-0.25	
178		-----		-----	
179	D92	223		-1.18	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315	D92	224		-1.02	
325	D92	232		0.22	
333	D92	244		2.09	
340	D92	246		2.40	
349	D92	232		0.22	
353		-----		-----	
360	D92	226		-0.71	
432	D92	222		-1.33	
445	D92	236.3		0.89	
446	D92	233		0.38	
450		-----		-----	
451		-----		-----	
473		-----		-----	
495	D92	236.0		0.84	
496		-----		-----	
541		-----		-----	
551	D92	230		-0.09	
603		-----		-----	
608		-----		-----	
614		-----		-----	
621		-----		-----	
657	D92	231		0.07	
663		-----		-----	
840	D92	232.2		0.25	
862	D92	226		-0.71	
875		-----		-----	
886	D92	230		-0.09	
902	D92	224.0		-1.02	
912	D92	228		-0.40	
922	D92	236.0		0.84	
963	D92	230		-0.09	
974	D92	232		0.22	
994	D92	228.0		-0.40	
1013		-----		-----	
1017	D92	236		0.84	
1023		-----		-----	
1026	D92	228		-0.40	
1059	ISO2592	237		1.00	
1106		-----		-----	
1146		-----		-----	
1161		-----		-----	
1173		-----		-----	
1201	D92	218.0		-1.96	
1213	D92	227		-0.56	
1227		-----		-----	
1231	D92	234		0.53	
1235		-----		-----	
1271	D92	230.4		-0.03	
1316	D92	226		-0.71	
1324		-----		-----	
1328	GB/T3636	226		-0.71	
1401	D92	222		-1.33	
1412	D92	246.0		2.40	
1423		-----		-----	
1435	D92	228		-0.40	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564	D92	230		-0.09	
1568	D92	234.27		0.57	
1570		-----		-----	
1577	D92	230.0		-0.09	
1622	D92	220		-1.65	
1650		-----		-----	
1660		-----		-----	

1720		-----	-----
1722		-----	-----
1730	D92	234.0	0.53
1740		-----	-----
1748	D92	228	-0.40
1797		-----	-----
1799		-----	-----
1833	D92	232	0.22
1842		-----	-----
1850	ISO2592	236	0.84
1871	ISO2592	227.0	-0.56
1872	ISO2592	240	1.47
1874		-----	-----
1877	D92	220	-1.65
1915		-----	-----
1941	ISO2592	240	1.47
2122		-----	-----
2129	D92	227.7	-0.45
9101		-----	-----

normality	OK
n	48
outliers	0
mean (n)	230.58
st.dev. (n)	6.370
R(calc.)	17.84
R(D92:12)	18.00



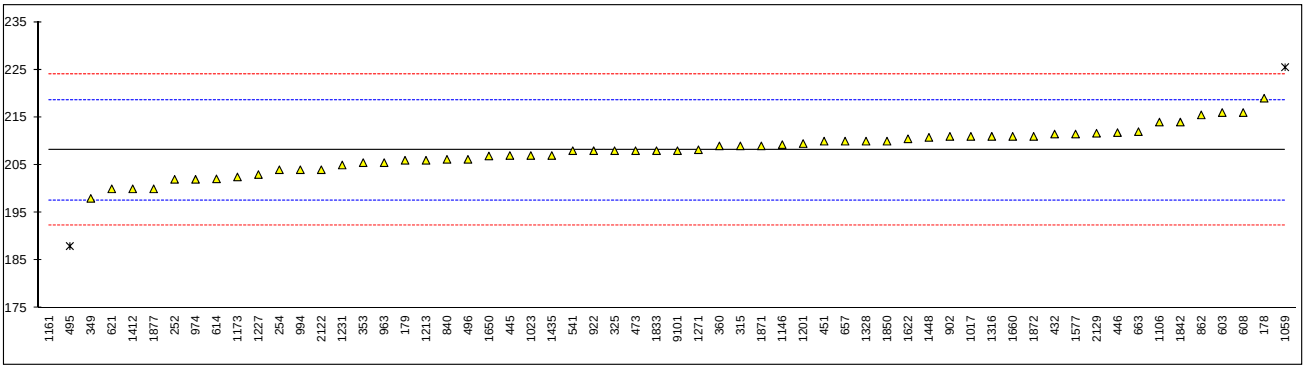


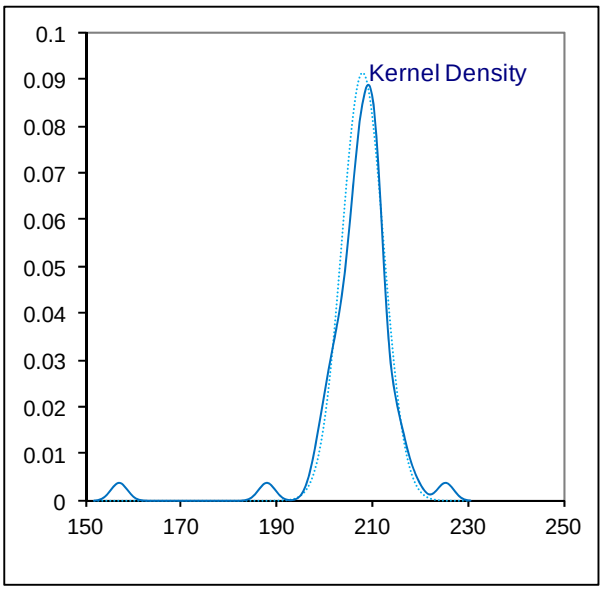
Determination of Flash Point PMcc and Analysis runtime on sample #14080; results in °C and min.

lab	method	value	mark	z(targ)	runtime	remarks
173		-----		-----	-----	
178	D4739	219		2.07	-----	
179	D93	206		-0.40	-----	
237		-----		-----	-----	
238		-----		-----	-----	
252	D93A	202		-1.15	28	
254	D93A	204.0		-0.78	32.16	
255		-----		-----	-----	
256		-----		-----	-----	
315	D93A	209		0.17	39.51	
325	D93B	208		-0.02	28m42s	
333		-----		-----	-----	
340		-----		-----	-----	
349	D93A	198	C	-1.91	-----	first reported:224
353	IP34	205.5		-0.49	-----	
360	D93A	209.0		0.17	36	
432	D93A	211.5		0.65	37	
445	D93A	207.0		-0.21	48.13	
446	D93	211.8		0.70	-----	
450		-----		-----	-----	
451	D93A	210.0		0.36	38	
473	D93A	208.0		-0.02	-----	
495	D93B	188.0	R(0.01)	-3.81	-----	
496	D93A	206.2		-0.36	-----	
541	D93A	208.0		-0.02	-----	
551		-----		-----	-----	
603	D3828	216.0		1.50	-----	
608	D93	216.0		1.50	-----	
614	D93A	202.1		-1.14	41	
621	D93A	200.0		-1.53	41	
657	D93A	210		0.36	-----	
663	D93A	212.0		0.74	-----	
840	D93A	206.2		-0.36	34	
862	D93A	215.5		1.40	-----	
875		-----		-----	-----	
886		-----		-----	-----	
902	D93A	211.0		0.55	38m40s	
912		-----		-----	-----	
922	D93A	208.0		-0.02	36.0	
963	D93A	205.5		-0.49	-----	
974	D93B	202		-1.15	62.08	
994	D93A	204.0		-0.78	-----	
1013		-----		-----	-----	
1017	D93A	211.0		0.55	-----	
1023	D93A	207		-0.21	-----	
1026		-----		-----	-----	
1059	ISO2719	225.5	R(0.05)	3.30	-----	
1106	D93A	214.0		1.12	-----	
1146	in house	209.28		0.23	39m15s	
1161	ISO2592	157.0	R(0.01)	-9.68	-----	
1173	IP34A	202.5		-1.06	-----	
1201	D93A	209.5		0.27	-----	
1213	D93A	206		-0.40	30	
1227	D93A	203		-0.96	-----	
1231	D93	205		-0.59	-----	
1235		-----		-----	-----	
1271	ISO2719	208.2		0.02	30	
1316	D93	211		0.55	35	
1324		-----		-----	-----	
1328	GB/T261	210.0		0.36	-----	
1401		-----		-----	-----	
1412	D93A	200.0		-1.53	-----	
1423		-----		-----	-----	
1435	D93	207		-0.21	-----	
1448	D93A	210.8		0.51	-----	
1460		-----		-----	-----	
1543		-----		-----	-----	
1564		-----		-----	-----	
1568		-----		-----	-----	
1570		-----		-----	-----	
1577	D93A	211.5		0.65	-----	
1622	D93A	210.5		0.46	-----	
1650	D93A	206.9	C	-0.23	34	first reported: flashpoint189.0/runtime:125
1660	D93	211.0		0.55	-----	

1720		-----	-----	-----
1722		-----	-----	-----
1730		-----	-----	-----
1740		-----	-----	-----
1748		-----	-----	-----
1797		-----	-----	-----
1799		-----	-----	-----
1833	D93A	208	-0.02	12
1842	D93A	214	1.12	-----
1850	ISO2719	210	0.36	-----
1871	ISO2719	209.0	0.17	-----
1872	ISO2719	211	0.55	-----
1874		-----	-----	-----
1877	D93A	200	-1.53	33
1915		-----	-----	-----
1941		-----	-----	-----
2122	D93	204	-0.78	-----
2129	D93A	211.67	0.68	40m58s
9101	D93	208	-0.02	-----

normality	OK
n	57
outliers	3
mean (n)	208.09
st.dev. (n)	4.370
R(calc.)	12.24
R(D93-A:13e)	14.77



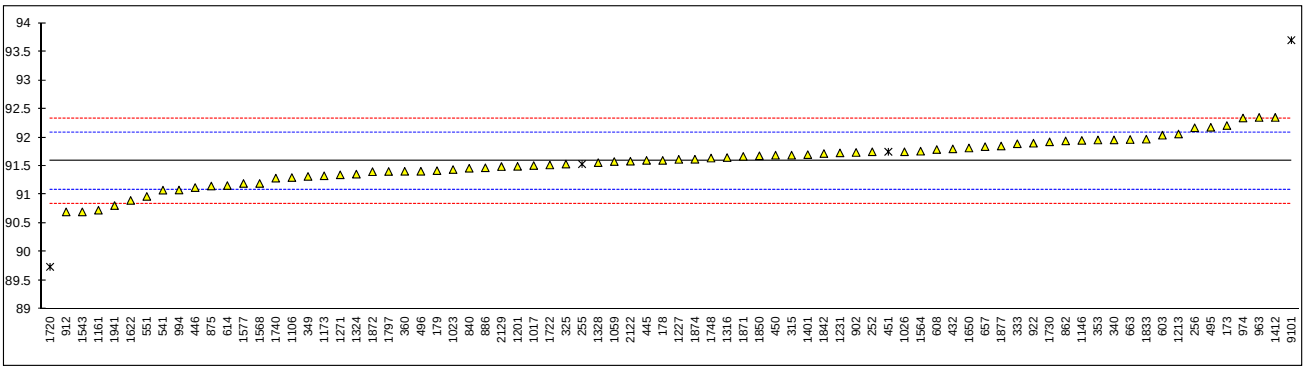


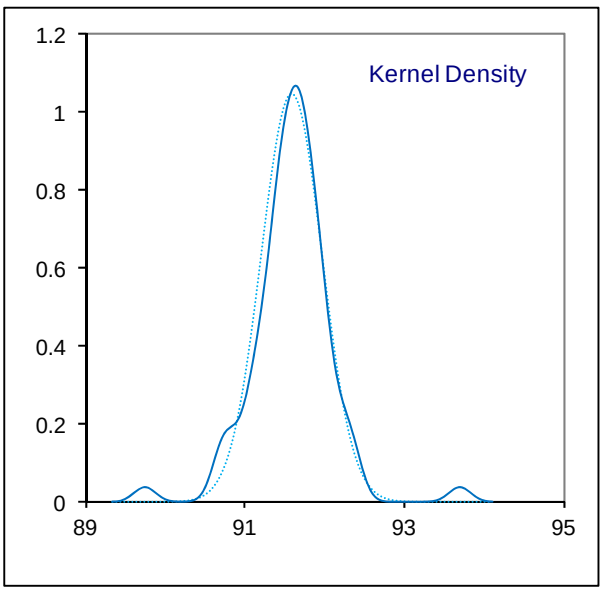
Determination of Kinematic Viscosity @ 40°C on sample #14080; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
173	D445	92.209		2.51	
178	D445	91.6		0.06	
179	D445	91.42	C	-0.66	first reported:94.42
237		-----		-----	
238		-----		-----	
252	D445	91.75		0.66	
254		-----		-----	
255	D7279	91.535	ex	-0.20	test result excluded, see §4.1
256	D445	92.17		2.35	
315	D445	91.69		0.42	
325	D445	91.535		-0.20	
333	D445	91.89		1.23	
340	D445	91.958		1.50	
349	D445	91.32		-1.07	
353	IP71	91.956		1.49	
360	D445	91.409		-0.71	
432	D445	91.8		0.86	
445	D445	91.60		0.06	
446	D445	91.125		-1.85	
450	D445	91.69		0.42	
451	D7279	91.75	ex	0.66	test result excluded, see §4.1
473		-----		-----	
495	D445	92.178		2.39	
496	D445	91.41	C	-0.70	first reported:89.700
541	D445	91.08		-2.03	
551	D445	90.97	C	-2.47	first reported:93.08
603	D445	92.04		1.83	
608	D445	91.79		0.82	
614	D445	91.16		-1.71	
621		-----		-----	
657	D445	91.84		1.03	
663	D445	91.964		1.52	
840	D445	91.462		-0.49	
862	D445	91.94		1.43	
875	D445	91.151		-1.75	
886	D445	91.47		-0.46	
902	D445	91.738		0.62	
912	D445	90.70		-3.56	
922	D445	91.90		1.27	
963	D445	92.35	C	3.08	first reported:87.24
974	D445	92.34		3.04	
994	D445	91.082		-2.02	
1013		-----		-----	
1017	D445	91.510		-0.30	
1023	D445	91.44		-0.58	
1026	D445	91.75		0.66	
1059	ISO3104	91.58	C	-0.02	first reported:95.74
1106	D445	91.30		-1.15	
1146	D445	91.949		1.46	
1161	D445	90.73		-3.44	
1173	IP71	91.33		-1.03	
1201	D445	91.495		-0.36	
1213	D445	92.06		1.91	
1227	D445	91.6175		0.13	
1231	D445	91.73		0.58	
1235		-----		-----	
1271	D445	91.347		-0.96	
1316	ISO3104	91.65		0.26	
1324	D445	91.36		-0.91	
1328	GB/T265	91.56		-0.10	
1401	D445	91.700		0.46	
1412	D445	92.35	C	3.08	first reported:93.63
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543	D445	90.70		-3.56	
1564	D445	91.76		0.70	
1568	D445	91.1966		-1.56	
1570		-----		-----	
1577	D445	91.196		-1.56	
1622	D445	90.90		-2.76	
1650	D445	91.816		0.93	
1660		-----		-----	

1720	D445	89.74	R(0.01)	-7.42
1722	D445	91.52		-0.26
1730	D445	91.924		1.36
1740	D445	91.29		-1.19
1748	D445	91.64		0.22
1797	ISO3104	91.4056		-0.72
1799		-----		-----
1833	D445	91.97		1.55
1842	IP71	91.72		0.54
1850	ISO3104	91.68		0.38
1871	ISO3104	91.669		0.34
1872	ISO3104	91.402		-0.74
1874	D445	91.620		0.14
1877	D445	91.85		1.07
1915		-----		-----
1941	ISO3104	90.81		-3.12
2122	in house	91.585		0.00
2129	D445	91.492		-0.37
9101	D445	93.7	R(0.01)	8.51

normality	OK
n	74
outliers	2 + 2 excl
mean (n)	91.585
st.dev. (n)	0.3821
R(calc.)	1.070
R(D445:12)	0.696



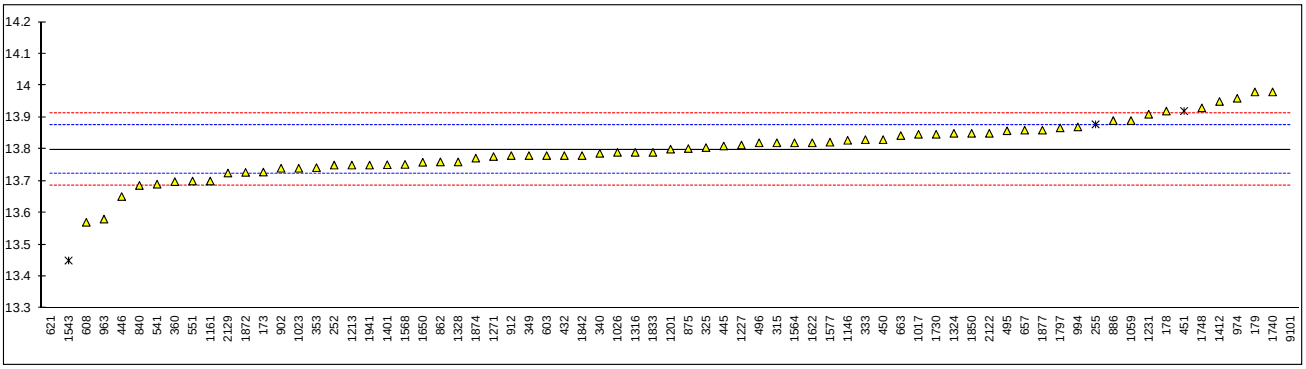


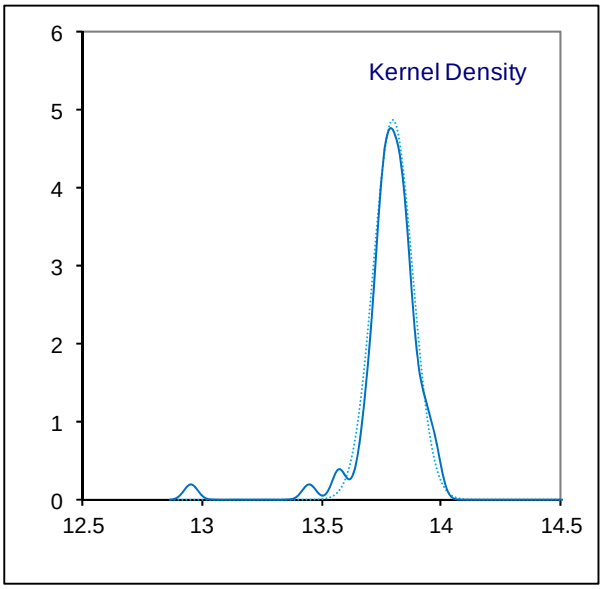
Determination of Kinematic Viscosity @ 100°C on sample #14080; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
173	D445	13.728		-1.90	
178	D445	13.92		3.23	
179	D445	13.98		4.83	
237		-----		-----	
238		-----		-----	
252	D445	13.75		-1.31	
254		-----		-----	
255	D7279	13.878	ex	2.10	test result excluded, see §4.1
256		-----		-----	
315	D445	13.82		0.56	
325	D445	13.805		0.15	
333	D445	13.83		0.82	
340	D445	13.787		-0.33	
349	D445	13.78		-0.51	
353	IP71	13.742		-1.53	
360	D445	13.698		-2.70	
432	D445	13.78		-0.51	
445	D445	13.81		0.29	
446	D445	13.651		-3.96	
450	D445	13.83		0.82	
451	D7279	13.92	ex	3.23	test result excluded, see §4.1
473		-----		-----	
495	D445	13.858		1.57	
496	D445	13.820		0.56	
541	D445	13.69		-2.92	
551	D445	13.70		-2.65	
603	D445	13.78		-0.51	
608	D445	13.57		-6.12	
614		-----		-----	
621	D445	12.9561	R(0.01)	-22.51	
657	D445	13.86		1.62	
663	D445	13.843		1.17	
840	D445	13.686		-3.02	
862	D445	13.76		-1.05	
875	D445	13.802		0.07	
886	D445	13.89		2.42	
902	D445	13.74		-1.58	
912	D445	13.78		-0.51	
922		-----		-----	
963	D445	13.58		-5.85	
974	D445	13.96		4.29	
994	D445	13.87		1.89	
1013		-----		-----	
1017	D445	13.847		1.28	
1023	D445	13.74		-1.58	
1026	D445	13.79		-0.25	
1059	ISO3104	13.89	C	2.42	first reported:13.72
1106		-----		-----	
1146	D445	13.828		0.77	
1161	D445	13.7		-2.65	
1173		-----		-----	
1201	D445	13.80		0.02	
1213	D445	13.75		-1.31	
1227	D445	13.8130		0.37	
1231	D445	13.91		2.96	
1235		-----		-----	
1271	D445	13.777		-0.59	
1316	ISO3104	13.79		-0.25	
1324	D445	13.85		1.36	
1328	GB/T265	13.76		-1.05	
1401	D445	13.751		-1.29	
1412	D445	13.95	C	4.03	first reported:14.09
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543	D445	13.45	R(0.01)	-9.32	
1564	D445	13.82		0.56	
1568	D445	13.7521		-1.26	
1570		-----		-----	
1577	D445	13.822		0.61	
1622	D445	13.82		0.56	
1650	D445	13.759		-1.07	
1660		-----		-----	

1720		-----		-----
1722		-----		-----
1730	D445	13.847		1.28
1740	D445	13.98		4.83
1748	D445	13.93		3.49
1797	ISO3104	13.8669		1.81
1799		-----		-----
1833	D445	13.79		-0.25
1842	IP71	13.78		-0.51
1850	ISO3104	13.85		1.36
1871		-----		-----
1872	ISO3104	13.727		-1.93
1874	D445	13.772		-0.73
1877	D445	13.86		1.62
1915		-----		-----
1941	ISO3104	13.75		-1.31
2122	in house	13.85		1.36
2129	D445	13.725		-1.98
9101	D445	15.6	R(0.01)	48.08

normality	OK
n	66
outliers	3 + 2 excl
mean (n)	13.799
st.dev. (n)	0.0821
R(calc.)	0.230
R(D445:12)	0.105



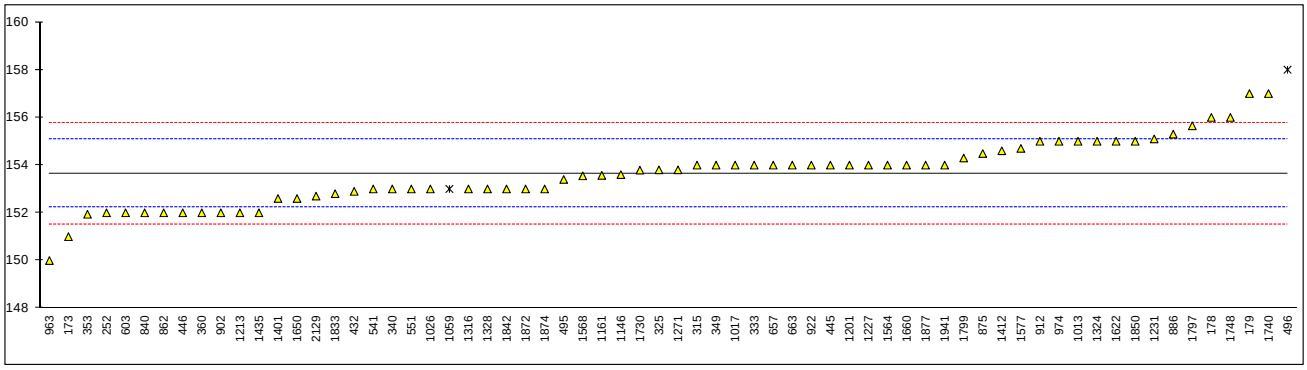


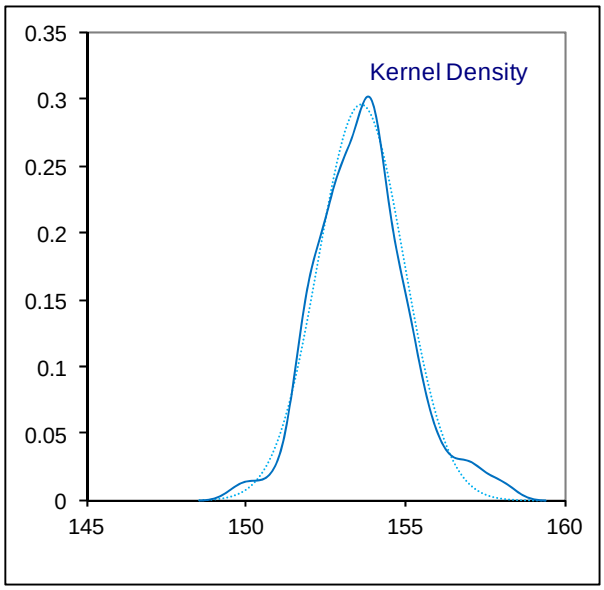
Determination of Viscosity Index on sample #14080

lab	method	value	mark	z(targ)	VI calculated by iis	remarks
173	D2270	151		-3.70	151	
178	D2270	156		3.30	156	
179	D2270	157		4.70	157	
237		-----		-----	-----	
238		-----		-----	-----	
252	D2270	152		-2.30	153	
254		-----		-----	-----	
255		-----		-----	155	
256		-----		-----	-----	
315	D2270	154		0.50	154	
325	D2270	153.8		0.22	153.8	
333	D2270	154		0.50	154	
340	D2270	153		-0.90	153	
349	D2270	154		0.50	154	
353	in house	151.94		-2.38	152.02	
360	D2270	152		-2.30	152	
432	D2270	152.9		-1.04	152.9	
445	D2270	154		0.50	154	
446	D2270	152		-2.30	152	
450		-----		-----	153.9	
451		-----		-----	155	
473		-----		-----	-----	
495	D2270	153.4		-0.34	153.5	
496	D2270	158	ex	6.10	**154**	test result exluded,see §4.1
541	D2270	153		-0.90	153	
551	D2270	153	C	-0.90	153	first reported:149
603	D2270	152		-2.30	152	
608		-----		-----	150	
614		-----		-----	-----	
621		-----		-----	-----	
657	D2270	154		0.50	154	
663	D2270	154		0.50	154	
840	D2270	152.0		-2.30	152.0	
862	D2270	152		-2.30	152	
875	D2270	154.4851		1.18	154.4847	
886	D2270	155.3		2.32	155.3	
902	D2270	152		-2.30	152	
912	D2270	155		1.90	155	
922	D2270	154.0		0.50	-----	
963	D2270	150	C	-5.10	149	first reported:158
974	D2270	155		1.90	155	
994		-----		-----	156	
1013	D2270	155		1.90	-----	
1017	D2270	154		0.50	155	
1023		-----		-----	153	
1026	D2270	153		-0.90	153	
1059	ISO2909	153	C, ex	-0.90	**155**	first reported:145, test result exluded,see §4.1
1106		-----		-----	-----	
1146	D2270	153.6		-0.06	153.4	
1161	D2270	153.57		-0.10	153.61	
1173		-----		-----	-----	
1201	D2270	154		0.50	154	
1213	D2270	152		-2.30	152	
1227	D2270	154		0.50	154	
1231	D2270	155.1		2.04	155.1	
1235		-----		-----	-----	
1271	D2270	153.8		0.22	153.7	
1316	D2270	153		-0.90	153	
1324	D2270	155		1.90	155	
1328	GB/T2541	153		-0.90	153	
1401	D2270	152.6		-1.46	152.6	
1412	D2270	154.6	C	1.34	154.6	first reported:154.5
1423		-----		-----	-----	
1435	D2270	152		-2.30	-----	
1448		-----		-----	-----	
1460		-----		-----	-----	
1543		-----		-----	150	
1564	D2270	154		0.50	154	
1568	D2270	153.55		-0.13	153.59	
1570		-----		-----	-----	
1577	D2270	154.7		1.48	154.7	
1622	D2270	155		1.90	155	
1650	D2270	152.6		-1.46	152.6	
1660	D2270	154		0.50	-----	

1720		-----	-----	-----
1722		-----	-----	-----
1730	D2270	153.79	0.21	153.79
1740	D2270	157	4.70	157
1748	D2270	156	3.30	156
1797	ISO2909	155.65	2.81	155.06
1799	D7042	154.3	0.92	-----
1833	D2270	152.8	-1.18	152.8
1842	IP226	153	-0.90	153
1850	ISO2909	155	1.90	154
1871		-----	-----	-----
1872	ISO2909	153	-0.90	153
1874	D2270	153	-0.90	153
1877	D2270	154	0.50	154
1915		-----	-----	
1941	ISO2909	154	0.50	154
2122		-----	-----	154
2129	D2270	152.7	-1.32	152.6
9101		-----	-----	177

normality	OK
n	64
outliers	0 + 2 excl
mean (n)	153.64
st.dev. (n)	1.346
R(calc.)	3.77
R(D2270:10)	2.00





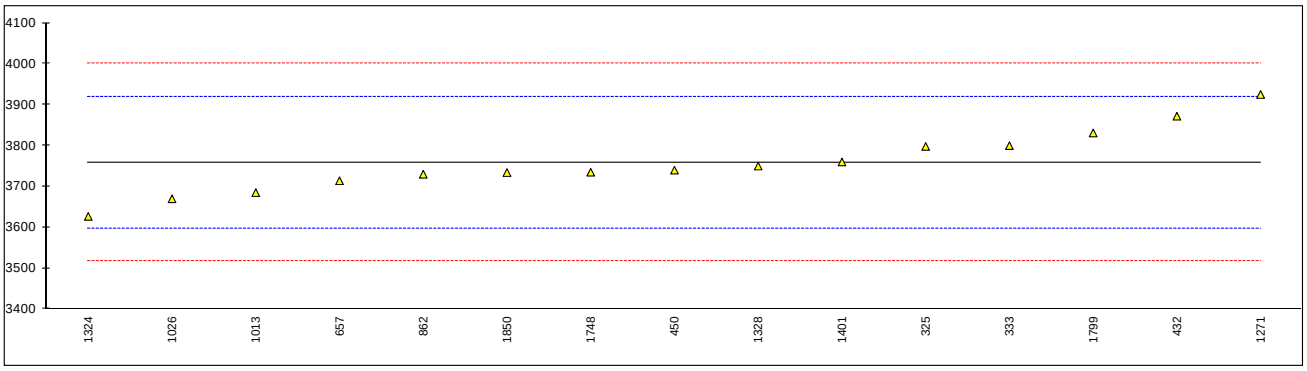
Determination of Apparent viscosity (CCS) @ -20°C on sample #14080; results in mPa·s

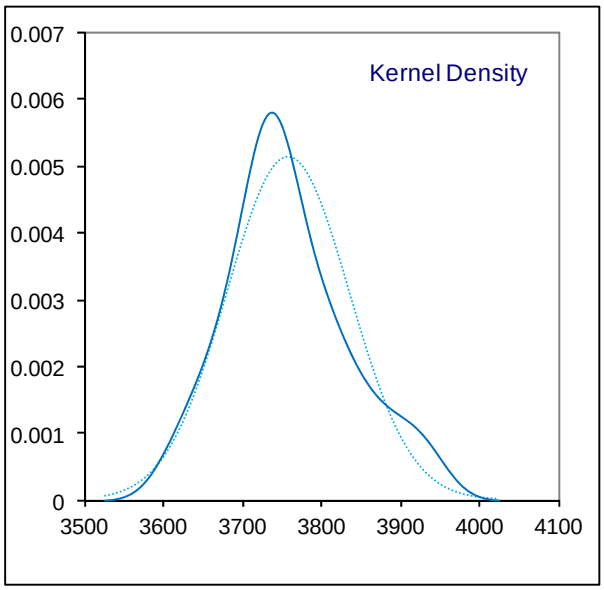
lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325	D5293	3798		0.50	
333	D5293	3800		0.52	
340		-----		-----	
349		-----		-----	
353		-----		-----	
360		-----		-----	
432	D5293	3872		1.41	
445		-----		-----	
446		-----		-----	
450	D5293	3740		-0.22	
451		-----		-----	
473		-----		-----	
495		-----		-----	
496		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
608		-----		-----	
614		-----		-----	
621		-----		-----	
657	D5293	3714		-0.55	
663		-----		-----	
840		-----		-----	
862	D5293	3730		-0.35	
875		-----		-----	
886		-----		-----	
902		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
994		-----		-----	
1013	D5293	3685		-0.91	
1017		-----		-----	
1023		-----		-----	
1026	D5293	3670		-1.09	
1059		-----		-----	
1106		-----		-----	
1146		-----		-----	
1161		-----		-----	
1173		-----		-----	
1201		-----		-----	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1235		-----		-----	
1271	D5293	3925		2.07	
1316		-----		-----	
1324	D5293	3627		-1.63	
1328	GB/T6538	3750		-0.10	
1401	D5293	3760		0.02	
1412		-----		-----	
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564		-----		-----	
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622		-----		-----	
1650		-----		-----	
1660		-----		-----	

1720		-----	-----
1722		-----	-----
1730		-----	-----
1740		-----	-----
1748	D5293	3735	-0.29
1797		-----	-----
1799	D5293	3831	0.91
1833		-----	-----
1842		-----	-----
1850	D5293	3734	-0.30
1871		-----	-----
1872		-----	-----
1874		-----	-----
1877		-----	-----
1915		-----	-----
1941		-----	-----
2122		-----	-----
2129		-----	-----
9101		-----	-----

normality	OK
n	15
outliers	0
mean (n)	3758.07
st.dev. (n)	77.473
R(calc.)	216.92
R(D5293:14)	225.48

R(D5293:14) constant cooling instrument = 274.34
R(D5293:14) thermo-electrically cooled instrument = 225.48



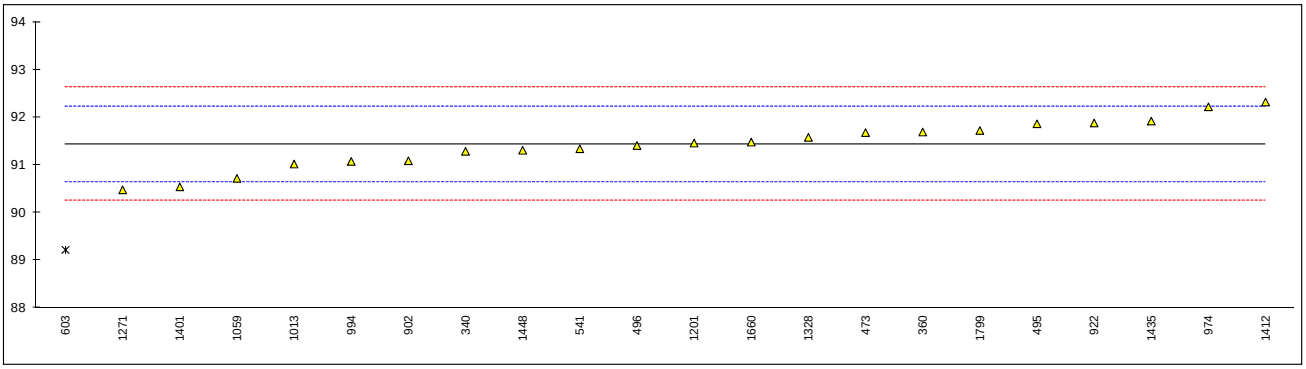


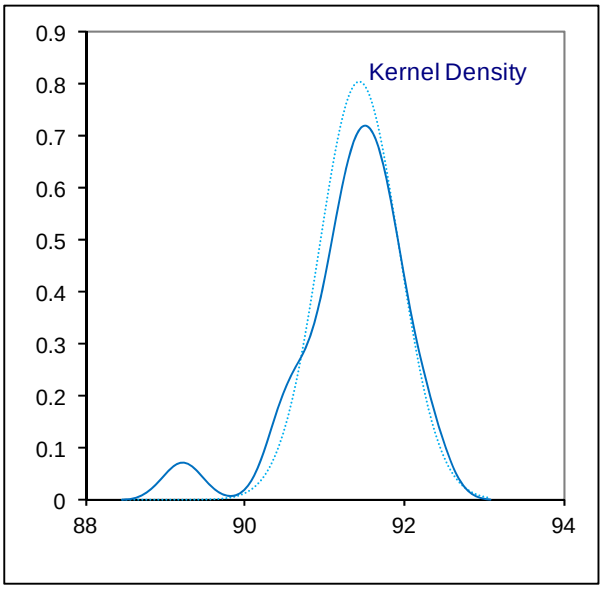
Determination of Kinematic Viscosity Stabinger @ 40 °C on sample #14080; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325		-----		-----	
333		-----		-----	
340	D7042	91.286		-0.37	
349		-----		-----	
353		-----		-----	
360	D7042	91.691		0.65	
432		-----		-----	
445		-----		-----	
446		-----		-----	
450		-----		-----	
451		-----		-----	
473	D7042	91.6795		0.62	
495	D7042	91.863		1.09	
496	D7042	91.409		-0.06	
541	D7042	91.34		-0.23	
551		-----		-----	
603	D7042	89.22	R(0.01)	-5.59	
608		-----		-----	
614		-----		-----	
621		-----		-----	
657		-----		-----	
663		-----		-----	
840		-----		-----	
862		-----		-----	
875		-----		-----	
886		-----		-----	
902	D7042	91.088		-0.87	
912		-----		-----	
922	D7042	91.88		1.13	
963		-----		-----	
974	D7042	92.22		1.99	
994	D7042	91.076		-0.90	
1013	D7042	91.02		-1.04	
1017		-----		-----	
1023		-----		-----	
1026		-----		-----	
1059	D7042	90.72		-1.80	
1106		-----		-----	
1146		-----		-----	
1161		-----		-----	
1173		-----		-----	
1201	D7042	91.46		0.07	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1235		-----		-----	
1271	D7042	90.4795		-2.41	
1316		-----		-----	
1324		-----		-----	
1328	NB/SH/T0870	91.580		0.37	
1401	D7042	90.542		-2.25	
1412	D7042	92.32	C	2.24	first reported:93.60
1423		-----		-----	
1435	D7042	91.92		1.23	
1448	D7042	91.309		-0.31	
1460		-----		-----	
1543		-----		-----	
1564		-----		-----	
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622		-----		-----	
1650		-----		-----	
1660	D7042	91.48		0.12	

1720		-----	-----
1722		-----	-----
1730		-----	-----
1740		-----	-----
1748		-----	-----
1797		-----	-----
1799	D7042	91.724	0.74
1833		-----	-----
1842		-----	-----
1850		-----	-----
1871		-----	-----
1872		-----	-----
1874		-----	-----
1877		-----	-----
1915		-----	-----
1941		-----	-----
2122		-----	-----
2129		-----	-----
9101		-----	-----

normality	OK
n	21
outliers	1
mean (n)	91.433
st.dev. (n)	0.4970
R(calc.)	1.391
R(D7042:12a)	1.109



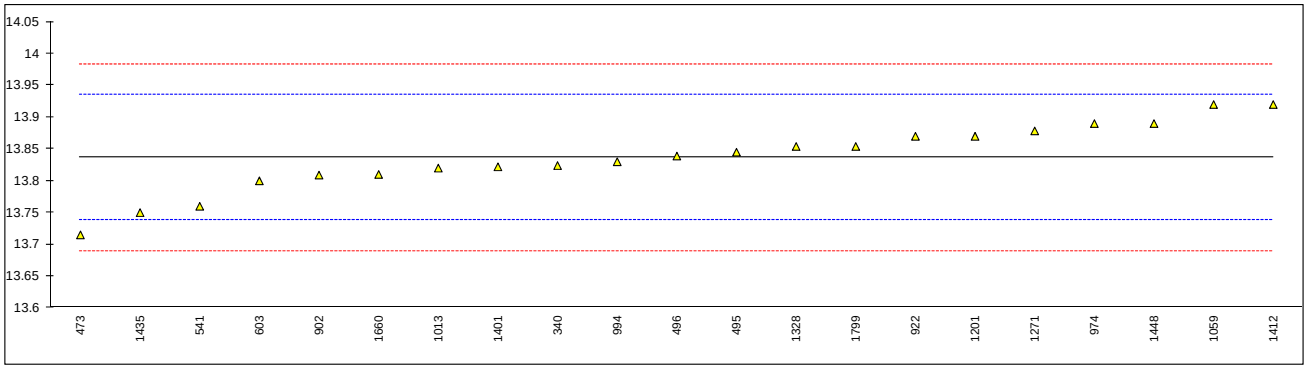


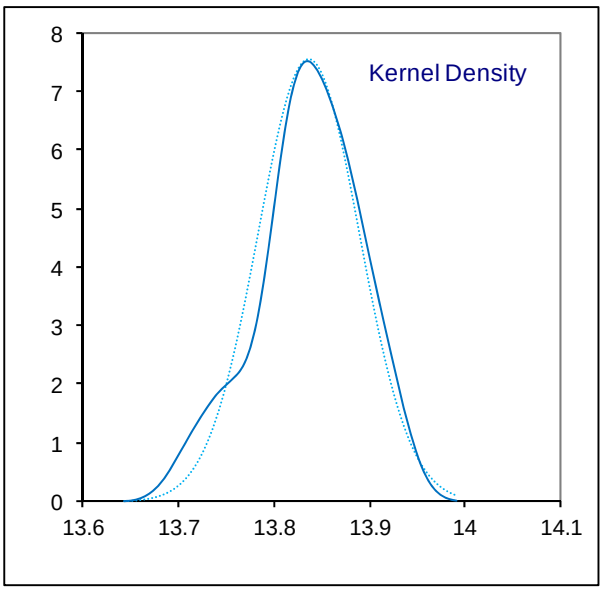
Determination of Kinematic Viscosity Stabinger @ 100 °C on sample #14080; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325		-----		-----	
333		-----		-----	
340	D7042	13.824		-0.26	
349		-----		-----	
353		-----		-----	
360		-----		-----	
432		-----		-----	
445		-----		-----	
446		-----		-----	
450		-----		-----	
451		-----		-----	
473	D7042	13.715		-2.49	
495	D7042	13.845		0.17	
496	D7042	13.839		0.05	
541	D7042	13.76		-1.57	
551		-----		-----	
603	D7042	13.80		-0.75	
608		-----		-----	
614		-----		-----	
621		-----		-----	
657		-----		-----	
663		-----		-----	
840		-----		-----	
862		-----		-----	
875		-----		-----	
886		-----		-----	
902	D7042	13.809		-0.57	
912		-----		-----	
922	D7042	13.87		0.68	
963		-----		-----	
974	D7042	13.89		1.09	
994	D7042	13.83		-0.14	
1013	D7042	13.82		-0.34	
1017		-----		-----	
1023		-----		-----	
1026		-----		-----	
1059	D7042	13.92		1.70	
1106		-----		-----	
1146		-----		-----	
1161		-----		-----	
1173		-----		-----	
1201	D7042	13.87		0.68	
1213		-----		-----	
1227		-----		-----	
1231		-----		-----	
1235		-----		-----	
1271	D7042	13.8785		0.85	
1316		-----		-----	
1324		-----		-----	
1328	NB/SH/T0870	13.854		0.35	
1401	D7042	13.822		-0.30	
1412	D7042	13.92	C	1.70	first reported:14.06
1423		-----		-----	
1435	D7042	13.75		-1.77	
1448	D7042	13.890		1.09	
1460		-----		-----	
1543		-----		-----	
1564		-----		-----	
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622		-----		-----	
1650		-----		-----	
1660	D7042	13.81		-0.55	

1720		-----	-----
1722		-----	-----
1730		-----	-----
1740		-----	-----
1748		-----	-----
1797		-----	-----
1799	D7042	13.854	0.35
1833		-----	-----
1842		-----	-----
1850		-----	-----
1871		-----	-----
1872		-----	-----
1874		-----	-----
1877		-----	-----
1915		-----	-----
1941		-----	-----
2122		-----	-----
2129		-----	-----
9101		-----	-----

normality	OK
n	21
outliers	0
mean (n)	13.837
st.dev. (n)	0.0529
R(calc.)	0.148
R(D7042:12a)	0.137





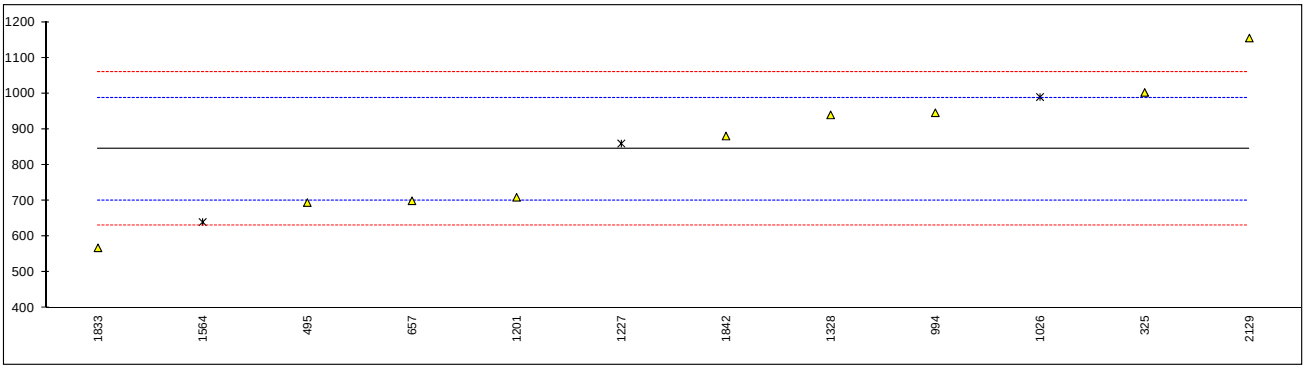
Determination of Nitrogen on sample #14080; results in mg/kg

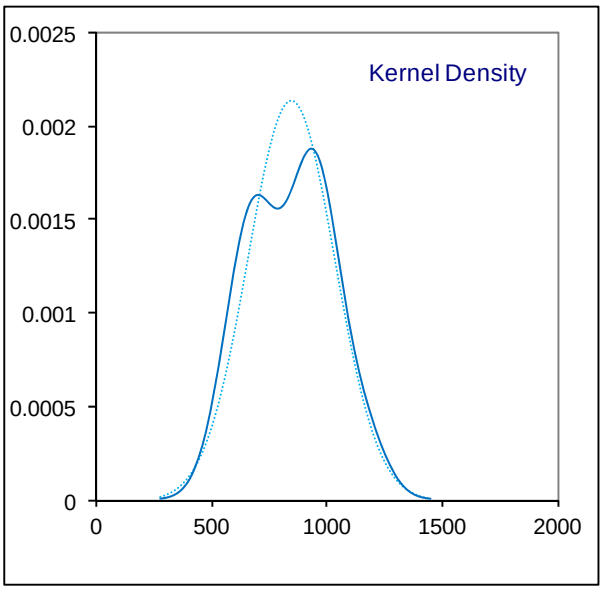
lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325	D5762	1003		2.22	
333		-----		-----	
340		-----		-----	
349		-----		-----	
353		-----		-----	
360		-----		-----	
432		-----		-----	
445		-----		-----	
446		-----		-----	
450		-----		-----	
451		-----		-----	
473		-----		-----	
495	D5762	695		-2.09	
496		-----		-----	
541		-----		-----	
551		-----		-----	
603		-----		-----	
608		-----		-----	
614		-----		-----	
621		-----		-----	
657	D3228	700		-2.02	
663		-----		-----	
840		-----		-----	
862		-----		-----	
875		-----		-----	
886		-----		-----	
902		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
994	D5762	946.0		1.42	
1013		-----		-----	
1017		-----		-----	
1023		-----		-----	
1026	D4629	990.0	ex	2.04	test result excluded, see §4.1
1059		-----		-----	
1106		-----		-----	
1146		-----		-----	
1161		-----		-----	
1173		-----		-----	
1201	D3228	709.73		-1.88	
1213		-----		-----	
1227	D4629	860.0	ex	0.22	test result excluded, see §4.1
1231		-----		-----	
1235		-----		-----	
1271		-----		-----	
1316		-----		-----	
1324		-----		-----	
1328	NB/SH/T0704	940		1.34	
1401		-----		-----	
1412		-----		-----	
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564	D4629	640.6	ex	-2.85	test result excluded, see §4.1
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622		-----		-----	
1650		-----		-----	
1660		-----		-----	

1720		-----	-----
1722		-----	-----
1730		-----	-----
1740		-----	-----
1748		-----	-----
1797		-----	-----
1799		-----	-----
1833	D3228	568.6	-3.86
1842	D5762	881	0.51
1850		-----	-----
1871		-----	-----
1872		-----	-----
1874		-----	-----
1877		-----	-----
1915		-----	-----
1941		-----	-----
2122		-----	-----
2129	D3228	1155	4.35
9101		-----	-----

normality	OK
n	9
outliers	0 + 3 excl
mean (n)	844.26
st.dev. (n)	187.016
R(calc.)	523.65
R(D3228:08)	200.00

Compare R(D5762:11) = 223.6



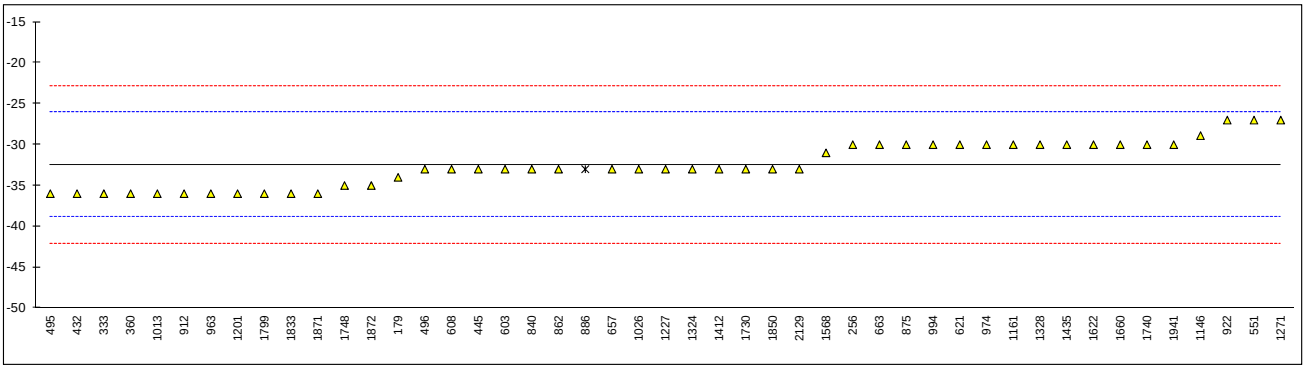


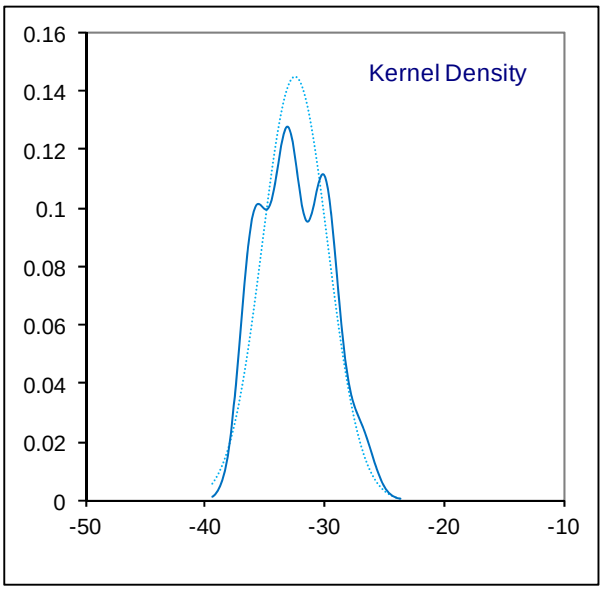
Determination of Pour Point (Manual) on sample #14080; results in °C

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179	D97	-34		-0.48	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256	D97	-30		0.76	
315		-----		-----	
325		-----		-----	
333	D97	-36		-1.10	
340		-----		-----	
349		-----		-----	
353		-----		-----	
360	D97	-36		-1.10	
432	D97	-36		-1.10	
445	D97	-33		-0.17	first reported:-25
446		-----		-----	
450		-----		-----	
451		-----		-----	
473		-----		-----	
495	D97	-36		-1.10	
496	D97	-33		-0.17	
541	D97	<-21		<-3.56	false negative test result?
551	D97	-27		1.70	
603	D97	-33		-0.17	
608	D97	-33		-0.17	
614		-----		-----	
621	D97	-30.0		0.76	
657	D97	-33		-0.17	
663	D97	-30		0.76	
840	D97	-33		-0.17	
862	D97	-33		-0.17	
875	D97	-30		0.76	
886	D5950	-33	ex	-0.17	test result excluded, D5950 is an automatic method
902		-----		-----	
912	D97	-36		-1.10	
922	D97	-27.0		1.70	
963	D97	-36		-1.10	
974	D97	-30		0.76	
994	D97	-30		0.76	
1013	D97	-36		-1.10	
1017		-----		-----	
1023		-----		-----	
1026	D97	-33		-0.17	
1059		-----		-----	
1106		-----		-----	
1146	D97	-28.9		1.11	
1161	ISO3016	-30		0.76	
1173		-----		-----	
1201	D97	-36.0		-1.10	
1213	D97	<-27		-----	
1227	D97	-33		-0.17	
1231		-----		-----	
1235		-----		-----	
1271	D97	-27		1.70	
1316		-----		-----	
1324	D97	-33		-0.17	
1328	GB/T3535	-30		0.76	
1401		-----		-----	
1412	D97	-33		-0.17	
1423		-----		-----	
1435	D97	-30		0.76	
1448		-----		-----	
1460		-----		-----	
1543	D97	<-36		-----	
1564		-----		-----	
1568	D97	-31		0.45	
1570		-----		-----	
1577		-----		-----	
1622	D97	-30		0.76	
1650		-----		-----	
1660	D97	-30		0.76	

1720		-----	-----
1722		-----	-----
1730	D97	-33	-0.17
1740	D97	-30	0.76
1748	D97	-35	-0.79
1797		-----	-----
1799	D97	-36	-1.10
1833	D97	-36	-1.10
1842		-----	-----
1850	ISO3016	-33	-0.17
1871	ISO3016	-36.0	-1.10
1872	ISO3016	-35	-0.79
1874		-----	-----
1877		-----	-----
1915		-----	-----
1941	ISO3016	-30	0.76
2122		-----	-----
2129	D97	-33	-0.17
9101		-----	-----

normality	OK
n	46
outliers	0 + 1 excl
mean (n)	-32.45
st.dev. (n)	2.749
R(calc.)	7.70
R(D97:12)	9.00



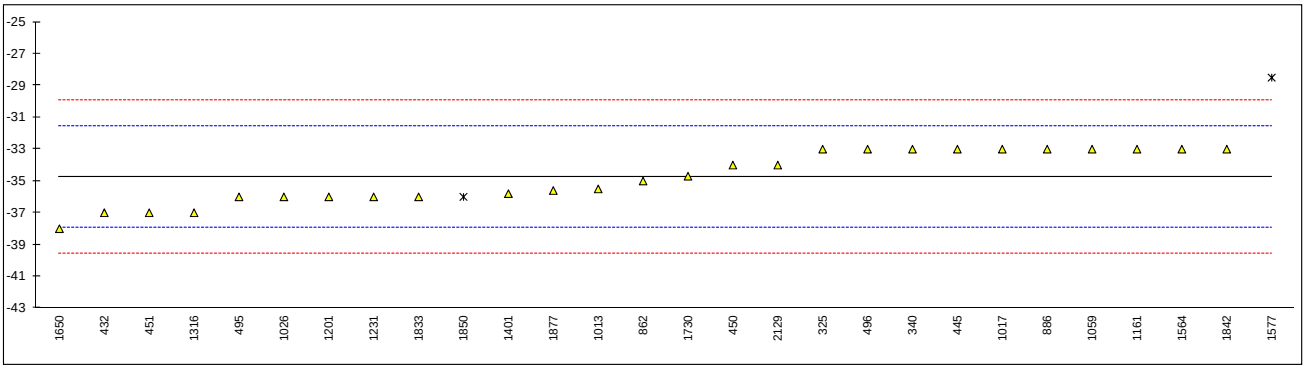


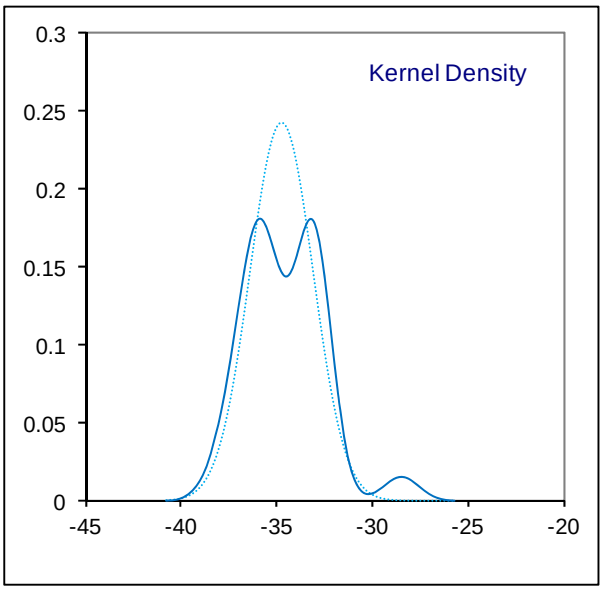
Determination of Pour Point (Automated, 1°C interval) on sample #14080; results in °C

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179		-----		-----	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325	D5950	-33		1.09	
333		-----		-----	
340	D5950	-33		1.09	
349		-----		-----	
353		-----		-----	
360		-----		-----	
432	D5950	-37		-1.40	
445	D5950	-33	C	1.09	first reported: -25
446		-----		-----	
450	D5950	-34.0		0.47	
451	D5949	-37		-1.40	
473		-----		-----	
495	D7346	-36		-0.78	
496	D7346	-33		1.09	
541		-----		-----	
551		-----		-----	
603		-----		-----	
608		-----		-----	
614		-----		-----	
621		-----		-----	
657		-----		-----	
663		-----		-----	
840		-----		-----	
862	D5950	-35		-0.15	
875		-----		-----	
886	D5950	-33	C	1.09	test result was reported under pour point manual
902		-----		-----	
912		-----		-----	
922		-----		-----	
963		-----		-----	
974		-----		-----	
994		-----		-----	
1013	D6892	-35.5		-0.46	
1017	D5950	-33		1.09	
1023		-----		-----	
1026	D5950	-36		-0.78	
1059	D5950	-33		1.09	
1106		-----		-----	
1146		-----		-----	
1161	D6749	-33		1.09	
1173		-----		-----	
1201	D5950	-36.0		-0.78	
1213		-----		-----	
1227		-----		-----	
1231	D5950	-36		-0.78	
1235		-----		-----	
1271		-----		-----	
1316	D5950	-37		-1.40	
1324		-----		-----	
1328		-----		-----	
1401	D7346	-35.8		-0.65	
1412		-----		-----	
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564	D5950	-33		1.09	
1568		-----		-----	
1570		-----		-----	
1577	D5950	-28.5	G(0.05)	3.89	
1622		-----		-----	
1650	D5950	-38.0		-2.02	
1660		-----		-----	

1720		-----		-----	
1722		-----		-----	
1730	D5950	-34.7		0.03	
1740		-----		-----	
1748		-----		-----	
1797		-----		-----	
1799		-----		-----	
1833	D5950	-36		-0.78	
1842	D5950	-33		1.09	
1850	ISO3016	-36	ex	-0.78	test result excluded, D3016 is an manual method
1871		-----		-----	
1872		-----		-----	
1874		-----		-----	
1877	D7346	-35.6		-0.53	
1915		-----		-----	
1941		-----		-----	
2122		-----		-----	
2129	D5950	-34		0.47	
9101		-----		-----	

normality	OK
n	26
outliers	1 + 1 excl.
mean (n)	-34.75
st.dev. (n)	1.646
R(calc.)	4.61
R(D5950:12)	4.50



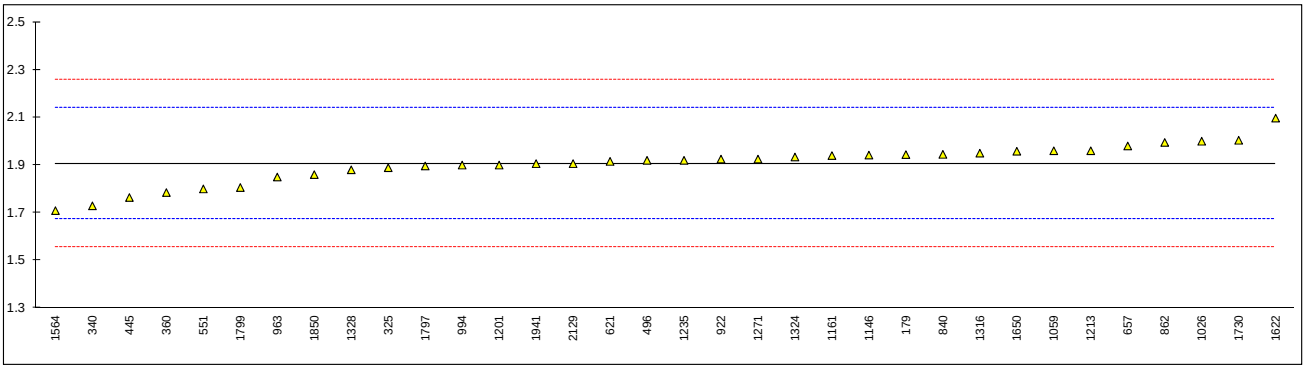


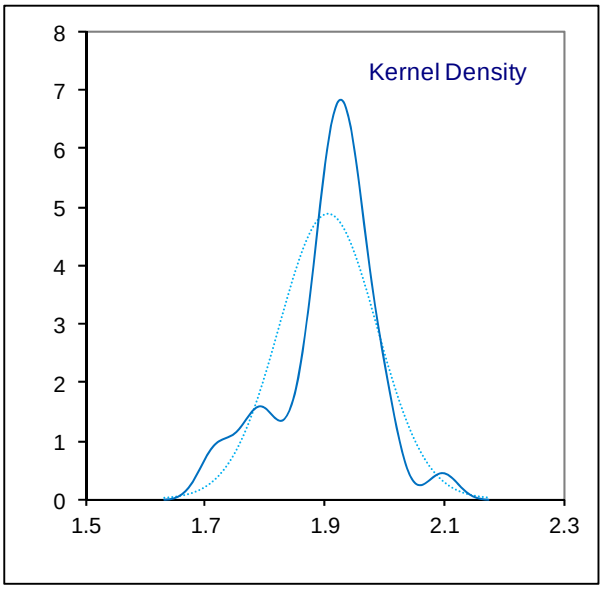
Determination of Sulphated Ash on sample #14080; results in %M/M

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179	D874	1.944		0.33	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325	D874	1.889		-0.14	
333		-----		-----	
340	D874	1.729		-1.51	
349		-----		-----	
353		-----		-----	
360	D874	1.785		-1.03	
432		-----		-----	
445	D874	1.764		-1.21	
446		-----		-----	
450		-----		-----	
451		-----		-----	
473		-----		-----	
495		-----		-----	
496	D874	1.920		0.12	
541		-----		-----	
551	D874	1.80	C	-0.91	first reported:1.04
603		-----		-----	
608		-----		-----	
614		-----		-----	
621	D874	1.9154		0.08	
657	D874	1.98	C	0.64	first reported:1.54
663		-----		-----	
840	D874	1.945		0.34	
862	D874	1.995		0.76	
875		-----		-----	
886		-----		-----	
902		-----		-----	
912		-----		-----	
922	D874	1.925		0.17	
963	D874	1.85		-0.48	
974		-----		-----	
994	D874	1.90		-0.05	
1013		-----		-----	
1017		-----		-----	
1023		-----		-----	
1026	D874	2.00		0.81	
1059	ISO3987	1.96		0.46	
1106		-----		-----	
1146	D874	1.942		0.31	
1161	ISO3987	1.94		0.29	
1173		-----		-----	
1201	D874	1.90		-0.05	
1213	D874	1.96		0.46	
1227		-----		-----	
1231		-----		-----	
1235	ISO3987	1.92		0.12	
1271	D874	1.925		0.17	
1316	D874	1.95		0.38	
1324	D874	1.934		0.24	
1328	GB/T2433	1.88		-0.22	
1401		-----		-----	
1412		-----		-----	
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564	D874	1.709		-1.68	
1568		-----		-----	
1570		-----		-----	
1577		-----		-----	
1622	D874	2.097		1.64	
1650	D874	1.958		0.45	
1660		-----		-----	

1720		-----	-----
1722		-----	-----
1730	D874	2.004	0.84
1740		-----	-----
1748		-----	-----
1797	ISO3987	1.8961	-0.08
1799	D874	1.806	-0.85
1833		-----	-----
1842		-----	-----
1850	ISO3987	1.86	-0.39
1871		-----	-----
1872		-----	-----
1874		-----	-----
1877		-----	-----
1915		-----	-----
1941	ISO3987	1.906	0.00
2122		-----	-----
2129	D874	1.906	0.00
9101		-----	-----

normality	OK
n	34
outliers	0
mean (n)	1.906
st.dev. (n)	0.0814
R(calc.)	0.228
R(D874:13a)	0.327



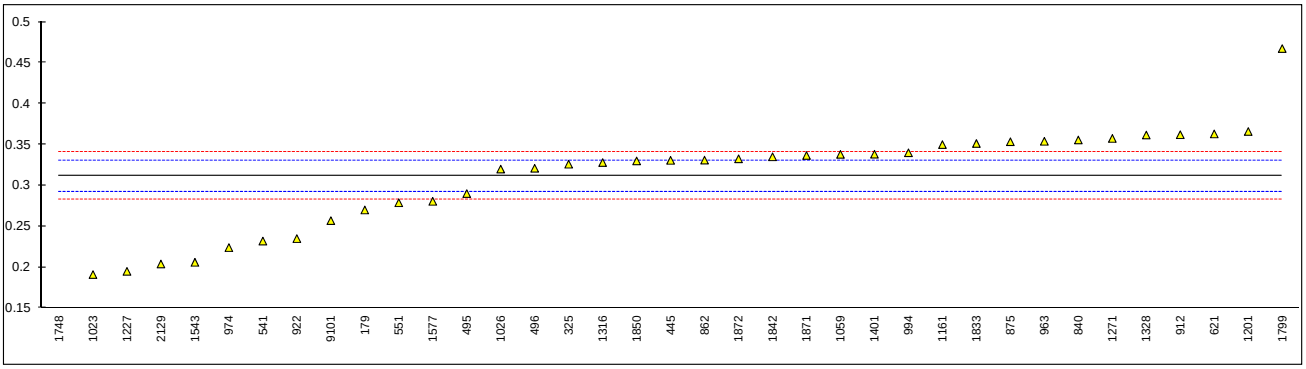


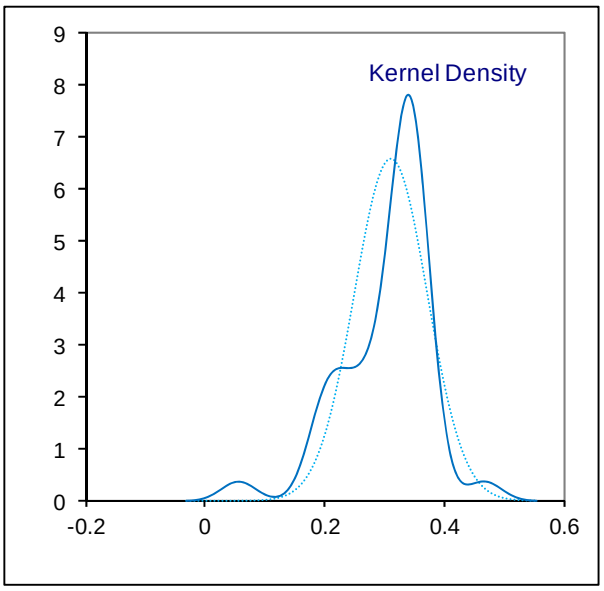
Determination of Sulphur on sample #14080; results in %M/M

lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178		-----		-----	
179	D4294	0.27		-4.31	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325	in house	0.326		1.51	
333		-----		-----	
340		-----		-----	
349		-----		-----	
353		-----		-----	
360		-----		-----	
432		-----		-----	
445	D2622	0.3307		2.00	
446		-----		-----	
450		-----		-----	
451		-----		-----	
473		-----		-----	
495	D2622	0.29		-2.23	
496	D2622	0.321		0.99	
541	D4294	0.232		-8.25	
551	D4294	0.27881		-3.39	
603		-----		-----	
608		-----		-----	
614		-----		-----	
621	D4294	0.363		5.35	
657		-----		-----	
663		-----		-----	
840	D4294	0.3556		4.58	
862	D2622	0.331		2.03	
875	D2622	0.3535		4.37	
886		-----		-----	
902		-----		-----	
912	D4294	0.362		5.25	
922	D4294	0.235		-7.94	
963	D4294	0.354		4.42	
974	D4294	0.224		-9.08	
994	D5453	0.340		2.96	
1013		-----		-----	
1017		-----		-----	
1023	D2622	0.191		-12.51	
1026	D2622	0.32		0.89	
1059	in house	0.338		2.76	
1106		-----		-----	
1146		-----		-----	
1161	D2622	0.35		4.00	
1173		-----		-----	
1201	D2622	0.366		5.66	
1213		-----		-----	
1227	D4294	0.1950		-12.10	
1231		-----		-----	
1235		-----		-----	
1271	ISO8754	0.3575		4.78	
1316	D7751	0.328		1.72	
1324		-----		-----	
1328	GB/T17476	0.3617	C	5.22	probably unit error, reported:3617 % M/M
1401	D6443	0.3382		2.78	
1412		-----		-----	
1423		-----		-----	
1435		-----		-----	
1448		-----		-----	
1460		-----		-----	
1543	D4294	0.2060		-10.95	
1564		-----		-----	
1568		-----		-----	
1570		-----		-----	
1577	D5453	0.2806		-3.21	
1622		-----		-----	
1650		-----		-----	
1660		-----		-----	

1720		-----		-----
1722		-----		-----
1730		-----		-----
1740		-----		-----
1748	D6481	0.0577	R(0.01)	-26.36
1797		-----		-----
1799	D4294	0.4674		16.20
1833	IP336	0.3513		4.14
1842	D2622	0.335		2.44
1850	ISO8754	0.33		1.93
1871	D4294	0.33668		2.62
1872	EN-ISO20846	0.3326		2.20
1874		-----		-----
1877		-----		-----
1915		-----		-----
1941		-----		-----
2122		-----		-----
2129	IP336	0.204		-11.16
9101	D4294	0.25701		-5.66

		Only ASTM D2622 data
normality	OK	OK
n	36	9
outliers	1	1
mean (n)	0.3115	0.3330
st.dev. (n)	0.06073	0.02229
R(calc.)	0.1700	0.0624
R(D2622:10)	0.0270	0.0284



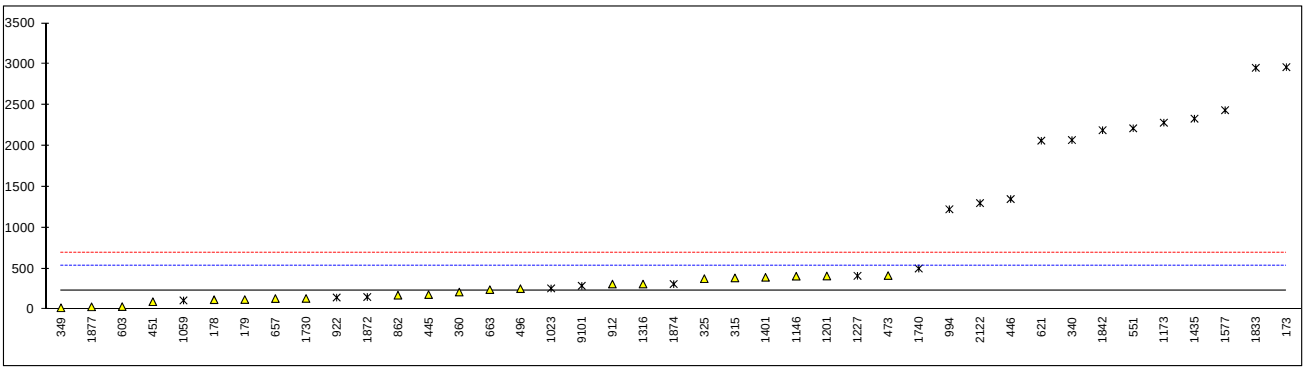


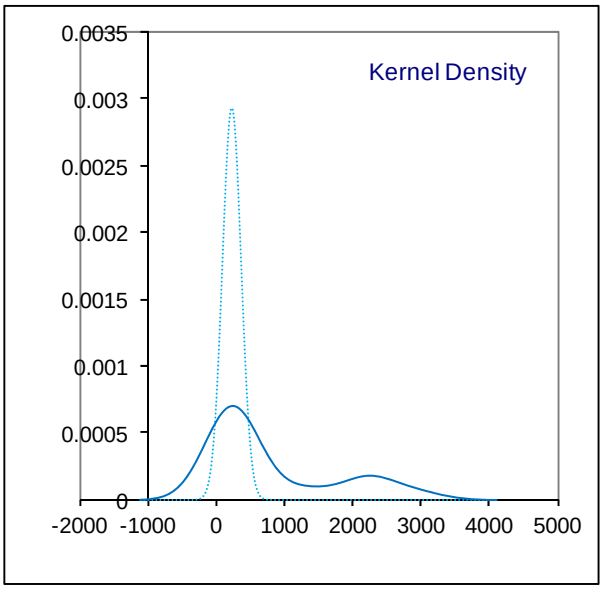
Determination of Water on sample #14080; results in mg/kg

lab	method	value	mark	z(targ)	remarks
173	D6304	2963.2	ex	17.53	result excluded, see §4.1
178	D6304C	119		-0.69	
179	D6304C	120		-0.68	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315	D6304C	385.6		1.02	
325	D6304C	376		0.96	
333		-----		-----	
340	D6304A	2071	ex	11.81	result excluded, see §4.1
349	D6304C	20		-1.32	
353		-----		-----	
360	D6304C	212		-0.09	
432		-----		-----	
445	D6304C	181.4		-0.29	
446	D6304A	1350	ex	7.20	result excluded, see §4.1
450		-----		-----	
451	D6304C	94.3		-0.85	first reported:0.01
473	D6304C	414.5		1.20	
495	D6304C	<30		-----	
496	D6304C	254		0.18	
541		-----		-----	
551	D6304A	2215	ex	12.74	result excluded, see §4.1
603	D6304C	35		-1.23	
608		-----		-----	
614		-----		-----	
621	D6304A	2063.73	ex	11.77	result excluded, see §4.1
657	D6304C	133		-0.60	
663	D6304C	242.5		0.10	
840		-----		-----	
862	D6304C	174.2		-0.33	
875		-----		-----	
886		-----		-----	
902		-----		-----	
912	D6304C	310		0.54	
922	D6304A	145.4	ex	-0.52	result excluded, see §4.1
963		-----		-----	
974		-----		-----	
994	D6304A	1225	ex	6.40	result excluded, see §4.1
1013		-----		-----	
1017		-----		-----	
1023	D6304A	257	ex	0.20	result excluded, see §4.1
1026		-----		-----	
1059	D6304Mod.	110	ex	-0.75	result excluded, see §4.1
1106		-----		-----	
1146	D6304C	406		1.15	
1161		-----		-----	
1173	in house	2284	ex	13.18	result excluded, see §4.1
1201	D6304C	409		1.17	probably unit error, reported: 0.409 mg/kg
1213		-----		-----	
1227	D6304A	411	ex	1.18	result excluded, see §4.1
1231		-----		-----	
1235		-----		-----	
1271		-----		-----	
1316	D6304C	310		0.54	
1324		-----		-----	
1328		-----		-----	
1401	D6304C	393		1.07	
1412		-----		-----	
1423		-----		-----	
1435	D1744	2333	ex	13.49	result excluded, see §4.1
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564		-----		-----	
1568		-----		-----	
1570		-----		-----	
1577	D4928	2436.7	ex	14.16	result excluded, see §4.1
1622		-----		-----	
1650		-----		-----	
1660		-----		-----	

1720		-----		-----	
1722		-----		-----	
1730	D6304C	134		-0.59	
1740	D6304A	500	ex	1.75	result excluded, see §4.1
1748		-----		-----	
1797		-----		-----	
1799		-----		-----	
1833	D6304A	2954.2	ex	17.47	result excluded, see §4.1
1842	D6304A	2192	ex	12.59	result excluded, see §4.1
1850		-----		-----	
1871		-----		-----	
1872	ISO12937	151.8	ex	-0.48	result excluded, see §4.1
1874	E2412	310	ex	0.54	result excluded, see §4.1
1877	D6304C	31.7		-1.25	
1915		-----		-----	
1941		-----		-----	
2122	in house	1300	ex	6.88	result excluded, see §4.1
2129		-----		-----	
9101	D95	288.48	ex	0.40	result excluded, see §4.1

normality	OK
n	21 + 20 excl.
outliers	0
mean (n)	226.438
st.dev. (n)	136.2218
R(calc.)	381.421
R(D6304:07)	437.162





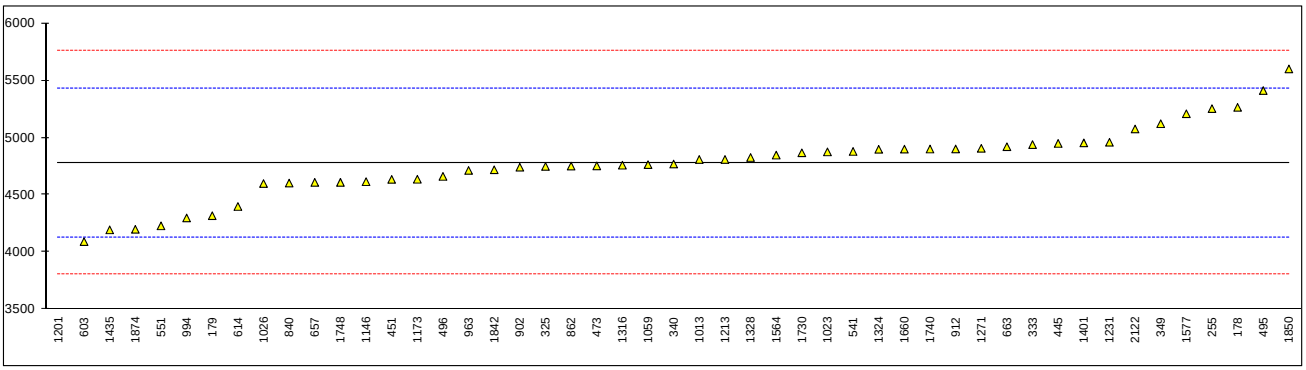
Determination of Calcium (Ca) on sample #14080; results in mg/kg

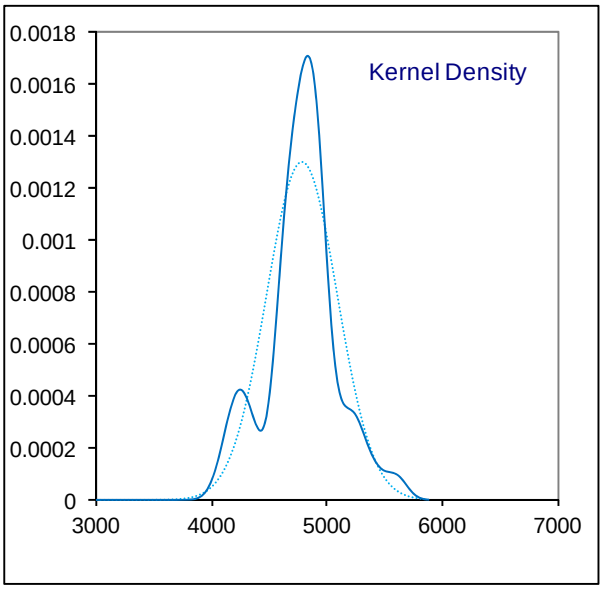
lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178	INH-5185	5265.35		1.49	
179	D5185	4319		-1.42	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255	INH-OL1	5254.3	C	1.45	first reported:3925.97 mg/L
256		-----		-----	
315		-----		-----	
325	INH-5185	4749		-0.10	
333	D5185	4940		0.49	
340	D5185	4770		-0.04	
349	D5185	5122		1.05	
353		-----		-----	
360		-----		-----	
432		-----		-----	
445	D5185	4950		0.52	
446		-----		-----	
450		-----		-----	
451	D5185	4636		-0.45	
473	D5185	4754		-0.09	
495	D5185	5412		1.94	
496	D5185	4662		-0.37	
541	D5185	4880		0.30	
551	D5185	4230		-1.70	
603	D5185	4092		-2.12	
608		-----		-----	
614	D5185	4399		-1.18	
621		-----		-----	
657	D5185	4610		-0.53	
663	D5185	4921.0		0.43	
840	D4628	4604		-0.55	
862	D5185	4752		-0.09	
875		-----		-----	
886		-----		-----	
902	D5185	4742.5		-0.12	
912	D5185	4902		0.37	
922		-----		-----	
963	D5185	4714		-0.21	
974		-----		-----	
994	D5185	4299		-1.48	
1013	D5185	4810		0.09	
1017		-----		-----	
1023	D5185	4876		0.29	
1026	D5185	4600	C	-0.56	probably unit error, reported: 0.46 mg/kg
1059	in house	4765		-0.05	
1106		-----		-----	
1146	in house	4616		-0.51	
1161		-----		-----	
1173	in house	4637		-0.45	
1201	D5185	221	R(0.01)	-14.02	
1213	D5185	4810		0.09	
1227		-----		-----	
1231	D4951	4960		0.55	
1235		-----		-----	
1271	D6481	4907		0.38	
1316	D5185	4760		-0.07	
1324	D5185	4898.7		0.36	
1328	GB/T17476	4827		0.14	
1401	D6443	4955	C	0.53	probably unit error, reported: 0.4955 mg/kg
1412		-----		-----	
1423		-----		-----	
1435	D5185	4195		-1.80	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564	D4951	4848		0.20	
1568		-----		-----	
1570		-----		-----	
1577	in house	5209.2		1.31	
1622		-----	W	-----	result withdrawn, first reported: 3658.84
1650		-----		-----	
1660	D5185	4900		0.36	

1720		-----		-----	
1722		-----		-----	
1730	D5185	4868		0.26	
1740	D5185	4901		0.37	
1748	D5185	4610		-0.53	
1797		-----		-----	
1799		-----		-----	
1833		-----		-----	
1842	in house	4720		-0.19	
1850	in house	5601		2.52	
1871		-----		-----	
1872		-----		-----	
1874	D6595	4200	C	-1.79	first reported: 3652
1877		-----		-----	
1915		-----		-----	
1941		-----		-----	
2122	D5185	5076		0.90	
2129		-----		-----	
9101		-----		-----	

	normality	OK
	n	48
	outliers	1
	mean (n)	4781.85
	st.dev. (n)	306.974
	R(calc.)	859.53
	R(D5185:13e)	911.10

application range 40 - 9000 mg/kg





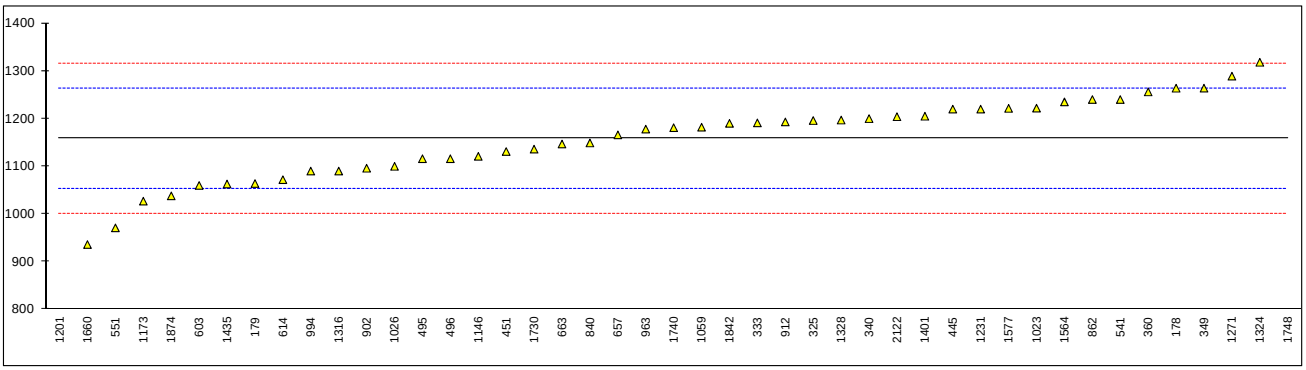
Determination of Phosphorus (P) on sample #14080; results in mg/kg

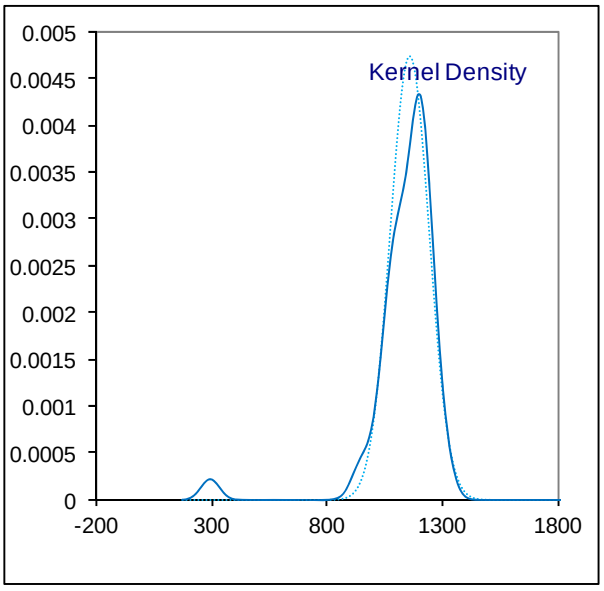
lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178	INH-5185	1263.78		2.02	
179	D5185	1064		-1.80	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255		-----		-----	
256		-----		-----	
315		-----		-----	
325	INH-5185	1196		0.73	
333	D5185	1191		0.63	
340	D5185	1200		0.80	
349	D5185	1264		2.03	
353		-----		-----	
360	D5185	1256		1.87	
432		-----		-----	
445	D5185	1220		1.19	
446		-----		-----	
450		-----		-----	
451	D5185	1131		-0.52	
473		-----		-----	
495	D5185	1116		-0.80	
496	D5185	1116		-0.80	
541	D5185	1240		1.57	
551	D5185	971		-3.58	
603	D5185	1060		-1.88	
608		-----		-----	
614	D5185	1072		-1.65	
621		-----		-----	
657	D5185	1166		0.15	
663	D5185	1146.8		-0.21	
840	IP500	1149		-0.17	
862	D5185	1240		1.57	
875		-----		-----	
886		-----		-----	
902	D5185	1096.0		-1.19	
912	D5185	1193		0.67	
922		-----		-----	
963	D5185	1178		0.38	
974		-----		-----	
994	D5185	1090		-1.30	
1013		-----		-----	
1017		-----		-----	
1023	D5185	1222		1.22	
1026	D5185	1100	C	-1.11	probably unit error, reported:0.11 mg/kg
1059	in house	1182		0.46	
1106		-----		-----	
1146	in house	1121		-0.71	
1161		-----		-----	
1173	in house	1027		-2.51	
1201	D5185	295	G(0.01)	-16.51	
1213		-----		-----	
1227		-----		-----	
1231	D4951	1220		1.19	
1235		-----		-----	
1271	D6481	1289		2.51	
1316	D5185	1090		-1.30	
1324	D5185	1318.1		3.06	
1328	GB/T17476	1197		0.75	
1401	D6443	1205	C	0.90	probably unit error, reported:0.1205 mg/kg
1412		-----		-----	
1423		-----		-----	
1435	D5185	1063		-1.82	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564	D4951	1235		1.47	
1568		-----		-----	
1570		-----		-----	
1577	in house	1221.5		1.21	
1622		-----		-----	
1650		-----		-----	
1660	D5185	936		-4.25	

1720		-----		-----
1722		-----		-----
1730	D5185	1136		-0.42
1740	D5185	1181		0.44
1748	D5185	2530	G(0.01)	26.25
1797		-----		-----
1799		-----		-----
1833		-----		-----
1842	in house	1190		0.61
1850		-----		-----
1871		-----		-----
1872		-----		-----
1874	D6595	1038		-2.30
1877		-----		-----
1915		-----		-----
1941		-----		-----
2122	D5185	1204		0.88
2129		-----		-----
9101		-----		-----

normality	OK
n	43
outliers	2
mean (n)	1158.03
st.dev. (n)	84.152
R(calc.)	235.63
R(D5185:13e)	146.33

application range: 10 -1000 mg/kg





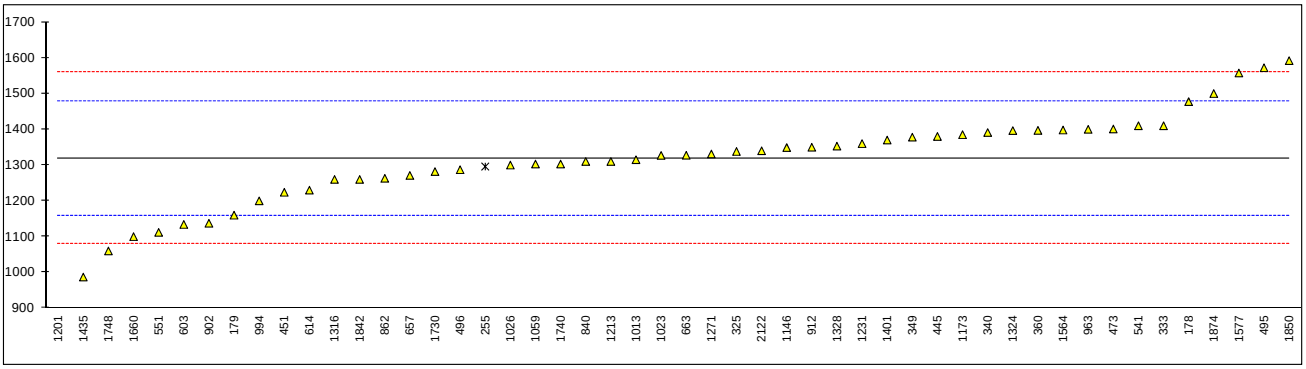
Determination of Zinc (Zn) on sample #14080; results in mg/kg

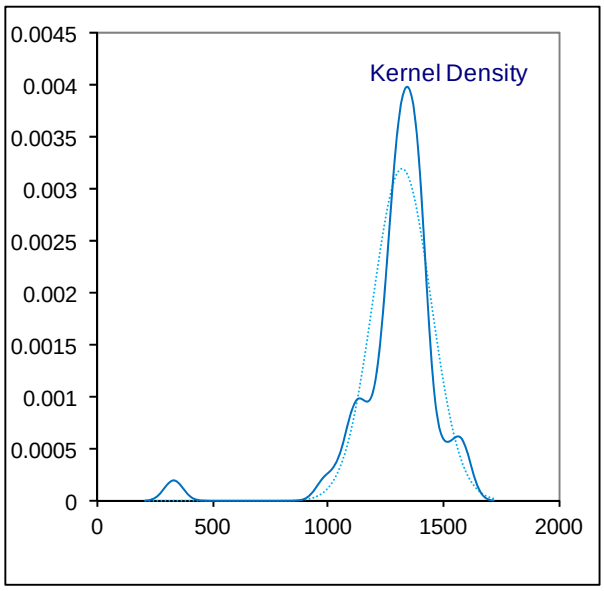
lab	method	value	mark	z(targ)	remarks
173		-----		-----	
178	INH-5185	1477.25		1.98	
179	D5185	1160		-1.98	
237		-----		-----	
238		-----		-----	
252		-----		-----	
254		-----		-----	
255	INH-OL1	1295.94	ex	-0.28	reported in mg/L
256		-----		-----	
315		-----		-----	
325	D5185	1338		0.24	
333	D5185	1410		1.14	
340	D5185	1391		0.90	
349	D5185	1378		0.74	
353		-----		-----	
360	D5185	1397		0.98	
432		-----		-----	
445	D5185	1380		0.76	
446		-----		-----	
450		-----		-----	
451	D5185	1224		-1.18	
473	D5185	1401		1.03	
495	D5185	1572		3.16	
496	D5185	1287		-0.40	
541	D5185	1410		1.14	
551	D5185	1112		-2.58	
603	D5185	1134		-2.30	
608		-----		-----	
614	D5185	1230		-1.11	
621		-----		-----	
657	D5185	1271		-0.60	
663	D5185	1327.4		0.11	
840	D4628	1310		-0.11	
862	D5185	1263		-0.70	
875		-----		-----	
886		-----		-----	
902	D5185	1137.5		-2.26	
912	D5185	1350		0.39	
922		-----		-----	
963	D5185	1400		1.01	
974		-----		-----	
994	D5185	1200		-1.48	
1013	D5185	1315		-0.05	
1017		-----		-----	
1023	D5185	1327		0.10	
1026	D5185	1300	C	-0.23	probably unit error, reported:0.13 mg/kg
1059	in house	1303		-0.20	
1106		-----		-----	
1146	in house	1349		0.38	
1161		-----		-----	
1173	in house	1385		0.83	
1201	D5185	333	R(0.01)	-12.29	
1213	D5185	1310		-0.11	
1227		-----		-----	
1231	D4951	1360		0.51	
1235		-----		-----	
1271	D6481	1331		0.15	
1316	D5185	1260		-0.73	
1324	D5185	1396.5		0.97	
1328	GB/T17476	1353		0.43	
1401	D6443	1370	C	0.64	probably unit error, reported:0.1370 mg/kg
1412		-----		-----	
1423		-----		-----	
1435	D5185	987		-4.14	
1448		-----		-----	
1460		-----		-----	
1543		-----		-----	
1564	D4951	1398		0.99	
1568		-----		-----	
1570		-----		-----	
1577	in house	1557.4		2.98	
1622		-----		-----	
1650		-----		-----	
1660	D5185	1100		-2.73	

1720		-----	-----
1722		-----	-----
1730	D5185	1282	-0.46
1740	D5185	1303	-0.20
1748	D5185	1060	-3.23
1797		-----	-----
1799		-----	-----
1833		-----	-----
1842	in house	1260	-0.73
1850	in house	1592	3.41
1871		-----	-----
1872		-----	-----
1874	D6595	1500	2.26
1877		-----	-----
1915		-----	-----
1941		-----	-----
2122	D5185	1340	0.27
2129		-----	-----
9101		-----	-----

normality	OK
n	48
outliers	1 + 1excl.
mean (n)	1318.73
st.dev. (n)	124.967
R(calc.)	349.91
R(D5185:13e)	224.52

application range: 60 – 1600 mg/kg





APPENDIX 2

Number of participants per country

1 lab in	ARGENTINA
1 lab in	AUSTRALIA
1 lab in	AUSTRIA
2 labs in	AZERBAIJAN
4 labs in	BELGIUM
1 lab in	BOSNIA and HERZEGOVINA
1 lab in	BRAZIL
1 lab in	BRUNEI
1 lab in	BULGARIA
3 labs in	CHINA, People's Republic
1 lab in	CROATIA
1 lab in	CZECH REPUBLIC
2 labs in	FRANCE
3 labs in	GERMANY
3 labs in	GREECE
1 lab in	INDIA
2 labs in	INDONESIA
1 lab in	IRELAND
1 lab in	ITALY
1 lab in	JORDAN
2 labs in	KENYA
1 lab in	MACEDONIA
3 labs in	MALAYSIA
1 lab in	MEXICO
5 labs in	NETHERLANDS
4 labs in	NIGERIA
2 labs in	NORWAY
1 lab in	PAKISTAN
1 lab in	POLAND
1 lab in	PORTUGAL
2 labs in	ROMANIA
2 labs in	RUSSIAN FEDERATION
3 labs in	SAUDI ARABIA
1 lab in	SERBIA
1 lab in	SINGAPORE
1 lab in	SLOVAKIA
1 lab in	SLOVENIA
2 labs in	SPAIN
2 labs in	SUDAN
1 lab in	SWEDEN
1 lab in	TAIWAN
2 labs in	TANZANIA
3 labs in	THAILAND
3 labs in	TURKEY
1 lab in	UNITED ARAB EMIRATES
8 labs in	UNITED KINGDOM
4 labs in	UNITED STATES OF AMERICA
2 labs in	VIETNAM

APPENDIX 3

Abbreviations:

C	= final result after checking of first reported suspect 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 outlier test
R(0.05)	= straggler in Rosner outlier test
ex	= excluded from calculations
U	= reported in different unit
W	= result withdrawn on request of the participants
fr.	= first reported
S	= scope of the reported method is not applicable
n.a.	= not applicable
n.e.	= not evaluated
SDS	= Safety Data Sheet

Literature:

1 iis Interlaboratory Studies, Protocol for the Organization, Statistics and Evaluation, April 2014

2 ASTM E178-89

3 ASTM E1301-89

4 ISO 5725-86

5 ISO 5725, parts 1-6, 1994

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7 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)

8 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)

9 IP 367/84

10 DIN 38402 T41/42

11 P.L. Davies, First reported Z. Anal. Chem, 331, 513, (1988)

12 J.N. Miller, Analyst, 118, 455, (1993)

13 Analytical Methods Committee Technical brief, No4 January 2001.

14 The Royal Society of Chemistry 2002, Analyst 2002, 127 pages 1359-1364, P.J. Lowthian and M. Thompson (see http://www.rsc.org/suppdata/an/b2/b205600n/)

15 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, *Technometrics*, 25(2), pp. 165-172, (1983)