Results of Proficiency Test
Fuel Oil
February 2010

Organised by: Institute for Interlaboratory Studies
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Authors: Ing. R.J. Starink
Correctors: dr. R.G. Visser & ing L. Sweere

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1 INTRODUCTION

Since 1994 the Institute for Interlaboratory Studies organizes a proficiency test for Fuel Oil every year. In the annual proficiency testing program of 2009/2010, it was decided to continue the round robin for the analysis of Fuel Oil. In this international interlaboratory study 76 laboratories in 35 different countries have participated. See appendix 2 for a list of participants in alphabetical country order. In this report the results of the proficiency test are presented and discussed.

2 SET-UP

The Institute for Interlaboratory Studies (i.i.s.) in Spijkenisse, The Netherlands, was the organiser of this proficiency test. It was decided to send two identical samples (1*1000mL and 1*500mL, both labelled #1003). Depending on registration, a special sample for the determination of Aluminium and Silicon (1*250mL, half filled, labelled #1004) was sent along. 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 guide 43 and ILAC-G13:2007, (R007), since January 2000 by the Dutch Accreditation Council, RvA (Raad voor Accreditatie). This ensures 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of November 2010 (iis-protocol, version 3.2). This protocol can be downloaded from the iis website http://www.iisnl.com.

2.3 CONFIDENTIALITY STATEMENT

All data present 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

In this proficiency test two types of material were prepared, a regular Fuel Oil and a Fuel Oil positive on Aluminium and Silicon. A drum of 200 liter of regular Fuel Oil was purchased from a German refinery. After warming-up to 60°C and homogenisation, the bulk sample was divided over 126 amber glass bottles of one litre and 75 amber glass bottles of 500 mL, all bottled labelled #1003. The homogeneity of the subsamples #1003 was checked by determination of density in accordance with ISO12185:96 on 11 stratified randomly selected samples.

	Density @ 15 °C in kg/L
Sample #1003-1	0.9839
Sample #1003-2	0.9838
Sample #1003-3	0.9839
Sample #1003-4	0.9839
Sample #1003-5	0.9838
Sample #1003-6	0.9838
Sample #1003-7	0.9838
Sample #1003-8	0.9838
Sample #1003-9	0.9838
Sample #1003-10	0.9838
Sample #1003-11	0.9838

Table 1: measured densities for homogeneity of subsamples #1003.

From the test results of table 1, the repeatabilities were calculated and compared with 0.3 times the corresponding target reproducibility in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density @ 15 °C in kg/L
r (Observed)	0.00013
Reference method	ISO12185:96
0.3 * R (ref. method)	0.00015

Table 2: repeatability of Density results of subsamples #1003

The calculated repeatability for Density was less than 0.3 times the corresponding reproducibility of ISO12185:96. Therefore, homogeneity of the subsamples of #1003 was assumed.

For sample #1004, one can of 10 liter of Fuel Oil, positive on Aluminium and Silicon was obtained from a local distributor. After warming-up to 60°C and homogenisation, the bulk sample was divided over 75 plastic bottles of 250 mL (filled for approx. 50%) and labelled #1004. The homogeneity of the subsamples was checked by determination of Aluminium and Silicon in accordance with ASTM D5184:06 method A (by ICP) on 8 stratified randomly selected samples.

	Aluminium in mg/kg	Silicon in mg/kg
Sample #1004-1	17	14
Sample #1004-2	18	15
Sample #1004-3	16	14
Sample #1004-4	17	15
Sample #1004-5	17	14
Sample #1004-6	18	15
Sample #1004-7	18	15
Sample #1004-8	18	16

Table 3: measured densities, Aluminum and Silicon for homogeneity of subsamples #1004.

From the test results of table 3, 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:

	Aluminium in mg/kg	Silicon in mg/kg
r (Observed)	1.5	1.5
Reference method	D5184:06-B	D5184:06-B
0.3 * R (ref. method)	1.6	2.4

Table 4: repeatabilities of Density, Aluminium and Silicon results of subsamples #1004

Both calculated repeatabilities, Aluminium and Silicon, were in agreement with 0.3 times the corresponding target reproducibility of the respective reference method. Therefore, homogeneity of the subsamples of #1004 was assumed.

Depending on the registration of the participant, one bottle of 1 litre and one bottle of 500 ml, both labelled #1003, and/or one bottle of 250 ml (half filled) labelled #1004, were dispatched to each of the participating laboratories on January 20, 2010.

2.5 STABILITY OF THE SAMPLES

The stability of Fuel Oil, packed in the amber glass and plastic bottles was checked. The material has been found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were asked to determine on sample #1003: Acid Number, Ash Content, Asphaltenes, Bromine Number, Calculated Carbon Aromaticity Index, Conradson Carbon Residue, Density @ 15 °C, Flash Point PMcc, Heat of Combustion (Gross and Net), Kinematic Viscosity (@ 50°C and 100°C), Micro Carbon Residue, Total Organic Chlorides, Pour Point (Upper and Lower), Sediments by Extraction, Total Sediment (Potential and Accelerated), Total Sulphur, Nitrogen, Water by Distillation, Metals (Al, Ni, K, Si, Na and V), Distillation (IBP, 5%-50% and FBP) and Total Carbon, Hydrogen and Nitrogen (CHN-analyzer).
On sample #1004 was requested to analyze: Aluminium, Silicon and total Aluminium/Silicon content. To get comparable results a detailed report form, on which the units were prescribed

as well as some of the required standards, was sent together with each set of samples. Also a letter of instructions and a SDS were added to the package.

3 RESULTS

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

Directly after deadline, a reminder fax was sent to those laboratories that did not report 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 the data analysis and the original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

Statistical calculations were performed as described in the report ‘iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation’ of November 2010 (iis-protocol, version 3.2).

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. After removal of outliers this check was repeated. In case a data set does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.
In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs outlier tests. Outliers are marked by D(0.01) for the Dixon test and by G(0.01) or DG(0.01) for the Grubbs test. Stragglers are marked by D(0.05) for the Dixon test and by G(0.05) or DG(0.05) for the Grubbs test. Both outliers and stragglers were not included in the calculations of the averages and the standard deviations.

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under the X-axis.
The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility

limits of the selected standard. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle. Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 3, nr.13-14).

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. The z-scores were calculated according to:

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

The $z_{(target)}$ scores are listed in the tables in appendix 1.
Absolute values for z<2 are very common and absolute values for z>3 are very rare. The usual interpretation of z-scores is as follows:

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

4 Evaluation

In this Interlaboratory study some problems with customs clearance were encountered during dispatch of the samples to laboratories in Croatia and Greece. Only one laboratory received the sample late. For Fuel Oil sample #1003, two participants did not report any results and ten laboratories reported their results after the final reporting date. For the additional Fuel Oil sample #1004, eight participants did not report any results and five participants reported after the final reporting date.
Not all laboratories were able to report all analyses requested. Finally, the participants reported in total 1081 numerical results. Observed were 61 statistically outlying results, which is 5.6%. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

Not all original data sets proved to have a normal distribution. Not normal distributions were found for the following determinations: Pour Point (Upper, Lower and Automated), Water and Aluminium (#1003). In all these cases, the results of the statistical evaluation should be used with care. One can see that this is justified from the Kernel Density Graphs.

4.1 EVALUATION PER SAMPLE AND PER TEST

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

Sample #1003

Acid Number: This determination is not problematic. Only one statistical outlier was observed. However, the calculated reproducibility is, after rejection of the statistical outlier, in full agreement with the requirements of ASTM D664:09.

Ash: This determination is very problematic. Only one statistical outlier was observed. However, the calculated reproducibility is, after rejection of the statistical outlier, not at all in agreement with the strict requirements of ASTM D482:07.

Asphaltenes: This determination may be somewhat problematic. Only one statistical outlier was observed. The calculated reproducibility is, after rejection of the statistical outlier, almost in agreement with the requirements of IP143:04.

Bromine Number: This determination is very problematic. Two statistical outliers were observed. The calculated reproducibility is, after rejection of the statistical outliers, not at all in agreement with the requirements of ASTM D1159:07.

Calculated Carbon Aromaticity Index: One statistical outlier was observed. Regretfully, no reproducibility requirements are known for this determination, therefore no significant conclusions were drawn.

CCR: This determination is not problematic. Only one statistical outlier was observed and the calculated reproducibility is, after rejection of the statistical outlier, in good agreement with the requirements of ASTM D189:06e2.

Density @ 15°C: This determination is problematic for three laboratories. Three statistical outliers were observed. However, the calculated reproducibility is, after rejection of the statistical outliers, in good agreement with the requirements of ISO12185:04.

Flash Point PMcc: This determination is problematic. Only one statistical outlier was observed. However, the calculated reproducibility is, after rejection of the statistical outlier, not in agreement with the requirements of ASTM D93:08.

When the results of the manual-flame, automatic-flame and automatic-electric mode were evaluated separately, none of the calculated reproducibilities are in agreement with the requirements of the standard.

HOC Gross: This determination of the Gross Heat of Combustion is not problematic. Only one statistical outlier was observed and the calculated reproducibility is, after rejection of the statistical outlier, in agreement with the requirements of ASTM D240:09.
When the results of the ASTM D240 were evaluated separately, the calculated reproducibility is in full agreement with its requirements. However, for the separately evaluated results of ASTM D4868, the calculated reproducibility is not at all in agreement with the requirements.

HOC Net: This determination of the Gross Heat of Combustion is problematic. Three statistical outliers were observed. The calculated reproducibility is, after rejection of the statistical outliers, not in agreement with the requirements of ASTM D240:09.
When the results of the ASTM D240 were evaluated separately, the calculated reproducibility is in good agreement with its requirements. However, for the separately evaluated results of ASTM D4868, the calculated reproducibility is not at all in agreement with the requirements.

Kin. Visc. @ 50°C: This determination is problematic for two laboratories. Only two statistical outliers were observed. The calculated reproducibility is, after rejection of the statistical outliers, in good agreement with ASTM D445:09.

Kin. Visc. @100°C: This determination may be somewhat problematic. Only one statistical outlier was detected. The calculated reproducibility is, after rejection of the statistical outlier, almost in agreement with ASTM D445:09.

MCR: This determination is not problematic. Only one statistical outlier was observed and the calculated reproducibility is, after rejection of the statistical outlier, in full agreement with the requirements of ASTM D4530:07.

Nitrogen: This determination is very problematic. No statistical outliers were observed. However, the calculated reproducibility is not at all in agreement with the requirements of ASTM D5762:08. One false negative test result was reported.

Total Org. Chlorides: Regretfully, no significant conclusions could be drawn. Only two laboratories reported a numerical result.

Lower Pour Point: This determination is not problematic. Only one statistical outlier was observed. The calculated reproducibility, after rejection of the statistical outlier, is in agreement with ASTM D97:08.

Upper Pour Point: This determination may be problematic. Only one statistical outlier was observed. However, the calculated reproducibility is, after rejection of the statistical outlier, not in agreement with ASTM D97:08. Rounding to 3 degrees acc. ASTM D97 may partly explain the large spread.

Pour Point (automated): This determination is problematic for four laboratories. Four statistical outliers were observed. However, the calculated reproducibility is, after rejection of the statistical outliers, in good agreement with ASTM D5950:07. It is remarkable to see that the automated Pour Point is lower than the consensus value for the Upper Pour Point as well as lower than the Lower Pour Point (!), while the automated Pour Point was expected to be about equal to the Upper Pour Point in agreement with the specification in ISO8217.

Sediment by Extraction: This determination is not problematic. No statistical outliers were detected. The calculated reproducibility is in good agreement with the requirements of ASTM D 473:07.

Total sediment: Accelerated:
This determination is not problematic. No statistical outliers were detected and the calculated reproducibility is in good agreement with IP390:04. (IP390:04 is technically identical to ISO10307-2:93)

Total sediment: Potential:
This determination not problematic. No statistical outliers were observed and the calculated reproducibility is in full agreement with IP390:04. (IP390:04 is technically identical to ISO10307-2:93)

Total Sulphur: This determination is problematic. Only two statistical outliers were observed. However, the calculated reproducibility is, after rejection of the statistical outliers, not at all in agreement with the requirements of ASTM D4294:08a. When the results for ASTM D4294 were evaluated separately, the calculated reproducibility is still not at all in agreement with the requirements.

Water: This determination is not problematic. No statistical outliers were detected and the calculated reproducibility is in full agreement with ASTM D95:05e1.

Aluminium: Due to the very low concentration of aluminium in sample #1003 no conclusions were drawn. ASTM D5184, IP377, IP470 and IP501 are only applicable for concentrations > 5 mg/kg.
Four false positive results were detected.

Nickel: This determination may be very problematic. Seven (!) statistical outliers were observed and the calculated reproducibility is, after rejection of the statistical outliers, not at all in agreement with the requirements of ASTM D5863:05-B (organic solvent dissolution). However, it should be noted that when compared with ASTM D5863:05-A (acid decomposition) the calculated reproducibility does meet the requirements.

Potassium: Due to the very low concentration of potassium in sample #1003 no conclusions were drawn. Most usual methods are applicable for concentrations >1 mg/kg only. One false positive result was detected.

Silicon: Due to the very low concentration of silicon in sample #1003 no conclusions could be drawn. ASTM D5184, IP377, IP470 and IP501 are only applicable for concentrations >10 mg/kg. Four false positive results were detected.

Sodium: This determination is not problematic. Only one statistical outlier was detected and the calculated reproducibility is, after rejection of the statistical outlier, in good agreement with the requirements ASTM D5863:05-B (organic solvent dissolution).

Vanadium: This determination is not problematic. Two statistical outliers were observed. However, the calculated reproducibility is, after the rejection of the statistical outliers, in good agreement with ASTM D5863:05-B (organic solvent dissolution). However, it should be noted that when compared with ASTM D5863:05-A (acid decomposition) the calculated reproducibility does not meet the requirements.

CHN-Analyzer: This determination is not problematic. No statistical outliers were observed. The calculated reproducibilities of the Carbon, Hydrogen and Nitrogen determination are all in agreement with the requirements of ASTM D5291:07.

Distillation: This determination is not problematic. In total five statistical outliers were detected. All the calculated reproducibilities are, after rejection of statistical outliers, in agreement with the requirements of ASTM D1160:06.

Sample #1004:

Aluminium: This determination is problematic for three laboratories. Three statistical outliers were observed. However, the calculated reproducibility is, after the rejection of the statistical outliers, in good agreement with ASTM D5184:06-B and with ASTM D5184:06-A. When the results for AAS and ICP were separately evaluated, both calculated reproducibilities were again in agreement with the respective requirements.

Silicon: This determination is problematic for two laboratories. Three statistical outliers were observed. The calculated reproducibility is, after the rejection of the statistical outliers, in agreement with ASTM D5184:06-B. However, when compared with ASTM D5184:06-A the calculated reproducibility does not agree.
When the results for AAS and ICP were separately evaluated, the calculated reproducibility for AAS results was in good agreement with ASTM D5184:06-B, but the calculated reproducibility for ICP results was not in agreement with ASTM D5184:06-A.

Total Al./Si.: This determination may be very problematic. Two statistical outliers were detected. The calculated reproducibility is, after the rejection of the statistical outliers, not at all in agreement with the estimated reproducibility of ASTM D5184:06-B and ASTM D5863:05-A. It was noticed that two participants may have made a calculation error.

Finally it should be remarked that proper attention for homogenisation is crucial for a material such as Fuel Oil. Due to the nature of the material it is very susceptible to problems when not handled correctly. Practically all methods for the determination of metals in Fuel Oil have similar statements regarding homogenization.

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 of the evaluated parameters, calculated reproducibilities and reproducibilities, derived from literature standards (in casu ASTM standards) are compared in the next table.

Parameters	Unit	n	average	2.8 * sd	R (lit)
Acid Number	mg KOH/g	15	0.0825	0.1407	0.1526
Ash	%M/M	52	0.0345	0.0144	0.0050
Asphaltenes	%M/M	27	11.901	2.526	2.380
Bromine Number	g Br/100g	9	18.70	12.34	5.59
Calc. Carbon Aromaticity Index		3	846.17	2.12	unknown
Conradson Carbon Residue	%M/M	21	17.210	1.406	2.580
Density @ 15 °C	kg/L	60	984.06	1.45	1.50
Flash Point PMcc	°C	53	128.86	8.65	6.00
Heat of Combustion Gross	MJ/kg	32	42.470	0.413	0.400
Heat of Combustion Net	MJ/kg	22	40.169	0.453	0.400
Kinematic Viscosity @ 50 °C	cSt	48	364.058	19.593	26.940
Kinematic Viscosity @ 100 °C	cSt	51	33.379	1.760	1.655
Micro Carbon Residue	%M/M	40	17.664	0.921	0.967
Nitrogen	µg/g	14	4626	3416	1231
Total Organic Chlorides	mg/kg	2	unknown	unknown	unknown
Lower Pour Point	°C	24	-5.00	6.86	6.60
Upper Pour Point	°C	39	-1.64	7.56	6.60
Pour Point (automated)	°C	15	-7.57	4.33	6.10
Sediment by Extraction	%M/M	28	0.0178	0.0182	0.0375
Total Sediment (Accelerated)	%M/M	21	0.0155	0.0234	0.0366
Total Sediment (Potential)	%M/M	24	0.0206	0.0322	0.0422
Total Sulphur	%M/M	66	2.956	0.232	0.146
Water by Distillation	%V/V	33	0.053	0.112	0.200
Aluminium as Al	mg/kg	20	1.37	3.54	(0.97)
Nickel as Ni	mg/kg	28	27.33	6.34	3.18
Potassium as K	mg/kg	8	0.49	0.92	(0.80)
Silicon as Si	mg/kg	23	2.63	4.50	(2.55)
Sodium as Na	mg/kg	32	17.76	9.26	12.25
Vanadium as V	mg/kg	35	144.22	39.76	64.03
CHN analyzer					
Total Carbon	%M/M	16	85.62	2.39	2.41
Total Hydrogen	%M/M	13	10.53	0.83	0.75
Total Nitrogen	%M/M	13	0.617	0.269	0.446
Distillation @ 760 mm Hg					
IBP	°C	12	238.97	31.26	49.45
5% recovered	°C	13	278.88	14.24	18.80
10% recovered	°C	13	294.79	10.24	14.47
20% recovered	°C	12	323.02	8.18	14.26
30% recovered	°C	12	351.56	7.96	15.60
40% recovered	°C	11	393.72	13.35	20.73
50% recovered	°C	11	493.21	18.32	18.10
FBP	°C	12	506.29	16.77	26.89

table 5: summary of test results on Fuel Oil sample #1003

*results between brackets should be used with care, because the average found was below the application range

Parameters	Unit	n	average	2.8 * sd	R (lit)
Aluminium	mg/kg	18	20.50	4.88	5.91
Silicon	mg/kg	18	18.29	6.90	9.29
Total Aluminium/Silicon	mg/kg	19	39.88	12.66	11.01

Table 6: summary of test results on Fuel Oil sample #1004

Without further statistical calculations it can be concluded that for most tests there is a good compliance of the group of participating laboratories with the relevant standards. The problematic tests have been discussed in paragraph 4.1.

4.3 COMPARISON OF THE PROFICIENCY TEST OF JANUARY 2010 WITH PREVIOUS PT'S

	January 2010	October 2009	January 2009	October 2008
Number of reporting labs	75	106	99	96
Number of results reported	1081	1426	1223	1293
Statistical outliers	61	59	45	64
Percentage outliers	5.9%	4.1%	3.7%	4.9%

Table 7: comparison with previous proficiency tests

In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.
The performance of the determinations of the proficiency tests was compared against the requirements of the respective standards. The conclusions are given the following table:

Determination	January 2010	October 2009	January 2009	October 2008
Acid Number	+	++		
Ash	--	--	--	--
Asphaltenes	-	++	--	--
Bromine Number	--	++	--	--
Calc. Carb. Aromaticity Index	n.e.	n.e.		
Conradson Carbon Residue	++	++	++	++
Density @ 15 °C	+	+	+/-	-
Flash Point PMcc	--	--	--	--
Heat of Combustion Gross	-	+/-	--	++
Heat of Combustion Net	--	++	--	++
Kinematic Viscosity @ 50 °C	++	++	++	++
Kinematic Viscosity @ 100 °C	--	+	--	--
Micro Carbon Residue	+/-	+/-	+	+/-
Nitrogen	--	--	--	--
Total Organic Chlorides	n.e.	n.e.	n.e.	n.e.
Lower Pour Point	-	-	--	--
Upper Pour Point	--	--	--	-
Pour Point (automated)	++	n.e.	n.e.	n.e.
Sediments by Extraction	++	++	++	++
Total Sediment (Accelerated)	++	++	+	++
Total Sediment (Potential)	++	++	++	++
Total Sulphur	--	--	--	--

Water by Distillation	++	++	++	++
Aluminium as Al #1004	++	--	--	(n.a.)
Nickel as Ni	--	--	--	--
Potassium as K	(--)	n.a.	(n.a.)	(n.a.)
Silicon as Si #1004	++	+	+	(n.a.)
Sodium as Na	++	++	--	++
Vanadium as V	++	++	++	++
Total Carbon	+/-	n.e.	++	++
Total Hydrogen	--	n.e.	++	+/-
Total Nitrogen	++	n.e.	++	++
IBP	++	++	-	++
5% recovered	++	++	--	++
10% recovered	++	-	++	++
20% recovered	++	+	++	++
30% recovered	++	++	--	++
40% recovered	++	--	+/-	++
50% recovered	+/-	--	--	--
FBP	++	--	--	--

table 8: comparison determinations of sample #1003 and #1004 against the standard
results between brackets should used with care, because the average was below the application range

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

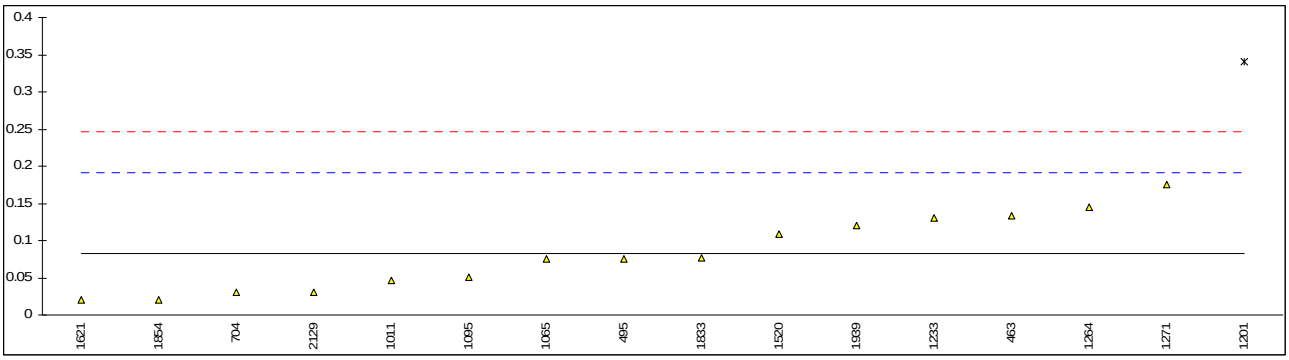
- ++: group performed much better than the standard
- + : group performed better than the standard
- +/-: group performance equals the standard
- - : group performed worse than the standard
- -- : group performed much worse than the standard
- n.e.: not evaluated
- n.d.: not determined

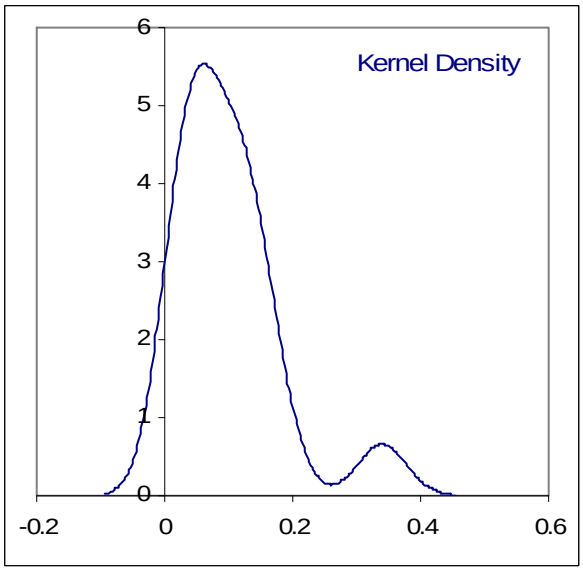
APPENDIX 1

Determination of Acid Number on sample #1003; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463	D664	0.1336		0.94	
495	D664	0.075		-0.14	
593		-----		-----	
622		-----		-----	
704	D664	0.03		-0.96	
705		-----		-----	
1011	D664	0.0463		-0.66	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065	D664	0.0748		-0.14	
1081		-----		-----	
1095	D664	0.051		-0.58	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138		-----		-----	
1140		-----		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	D664	0.34	G(0.01)	4.72	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233	D664	0.13		0.87	
1259		-----		-----	
1264	D664	0.145		1.15	
1269		-----		-----	
1271	D664	0.1758		1.71	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428		-----		-----	
1431		-----		-----	
1510		-----		-----	
1520	D664	0.109		0.49	
1621	D664	0.02		-1.15	
1631		-----		-----	
1633		-----		-----	
1635		-----		-----	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707		-----		-----	
1710		-----		-----	
1712		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	D664	0.077		-0.10	
1842		-----		-----	
1849		-----		-----	
1854	D664	0.02		-1.15	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D664	0.12	C	0.69	First reported 0.4839
1942		-----		-----	
1948		-----		-----	
2129	D664	0.03		-0.96	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	15	18
outliers	1	2
mean (n)	0.0825	0.0686
st.dev. (n)	0.05026	0.03283
R(calc.)	0.1407	0.0919
R(D664:09)	0.1526	0.1496

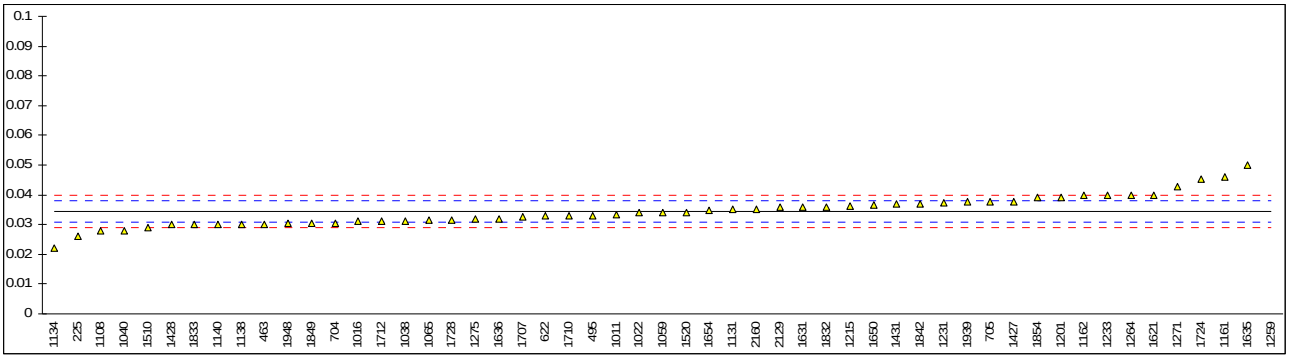


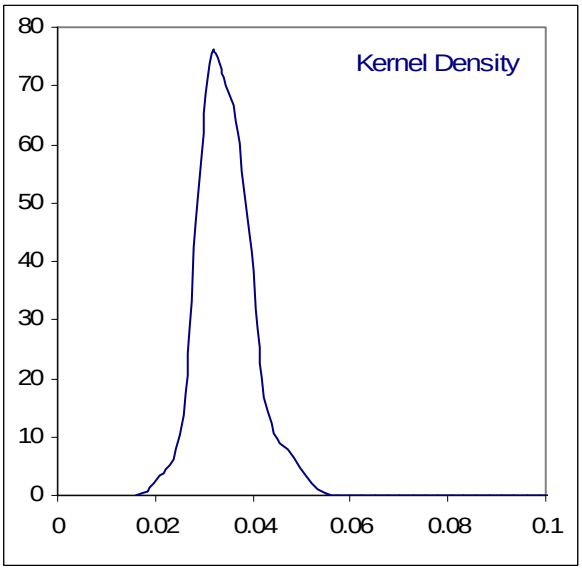


Determination of Ash on sample #1003; results in %M/M

lab	method	value	mark	z(targ)	remarks
225	D482	0.026	C	-4.75	First reported 0.004
463	D482	0.030		-2.51	
495	D482	0.033		-0.83	
593		-----		-----	
622	D482	0.033		-0.83	
704	D482	0.0305		-2.23	
705	D482	0.0378		1.85	
1011	D482	0.0333		-0.67	
1013		-----		-----	
1016	D482	0.031		-1.95	
1022	D482	0.034		-0.27	
1038	D482	0.0311		-1.90	
1040	EN6245	0.028		-3.63	
1059	ISO6245	0.034		-0.27	
1065	D482	0.0314		-1.73	
1081		-----		-----	
1095		-----		-----	
1108	D482	0.028		-3.63	
1126		-----		-----	
1131	ISO6245	0.0350		0.29	
1134	IP4	0.0222		-6.88	
1138	IP4	0.030		-2.51	
1140	D482	0.030		-2.51	
1161	ISO6245	0.046		6.45	
1162	D482	0.0398		2.97	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	D482	0.039		2.53	
1205		-----		-----	
1215	D482	0.0362		0.96	
1231	D482	0.03716		1.50	
1233	ISO6245	0.04		3.09	
1259	D482	0.6693	G(0.01)	355.49	
1264	D482	0.040		3.09	
1269		-----		-----	
1271	ISO6245	0.0429		4.71	
1275	IP4	0.0319		-1.45	
1419		-----		-----	
1425	IN HOUSE	<1.5		-----	
1427	D482	0.0378		1.85	
1428	ISO6245	0.030		-2.51	
1431	D482	0.037		1.41	
1510	D482	0.029		-3.07	
1520	D482	0.0341		-0.22	
1621	D482	0.0400		3.09	
1631	D482	0.036		0.85	
1633		-----		-----	
1635	D482	0.05		8.69	
1636	D482	0.032		-1.39	
1650	D482	0.0366		1.18	
1654	D482	0.0348		0.17	
1707	ISO6245	0.03252		-1.10	
1710	D482	0.033		-0.83	
1712	ISO6245	0.031		-1.95	
1720		-----		-----	
1724	D482	0.0454		6.11	
1728	D482	0.0317		-1.56	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832	ISO6245	0.0360		0.85	
1833	D482	0.03		-2.51	
1842	D482	0.037		1.41	
1849	ISO6245	0.03045		-2.26	
1854	D482	0.039		2.53	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D482	0.0375		1.69	
1942		-----		-----	
1948	D482	0.0303		-2.35	
2129	D482	0.0357		0.68	
2160	D482	0.0353		0.45	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	52	66
outliers	1	2
mean (n)	0.0345	0.0348
st.dev. (n)	0.00515	0.00405
R(calc.)	0.0144	0.0113
R(D482:07)	0.0050	0.0050

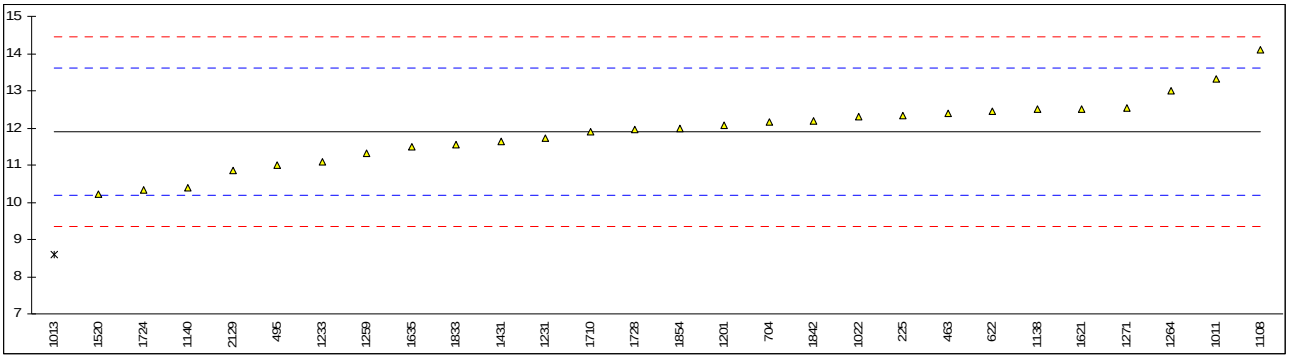


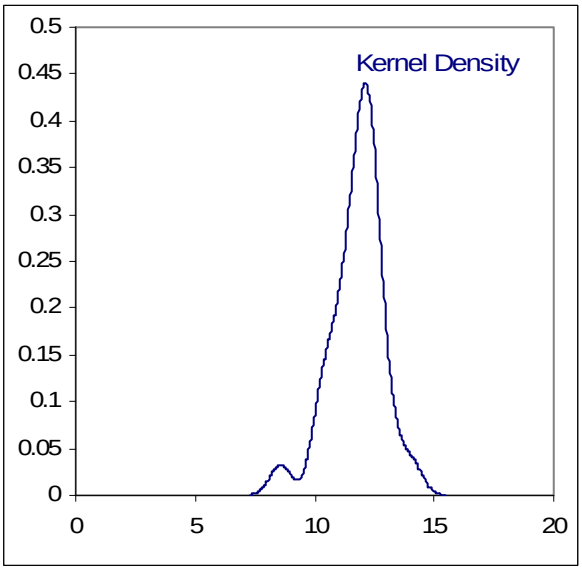


Determination of Asphaltenes on sample #1003; results in %M/M

lab	method	value	mark	z(targ)	remarks
225	IP143	12.33	C	0.50	First reported 7.99
463	IP143	12.39		0.58	
495	IP143	10.99		-1.07	
593		-----		-----	
622	IP143	12.45		0.65	
704	IP143	12.16		0.30	
705		-----		-----	
1011	IP143	13.33	C	1.68	First reported 14.12
1013	IP143	8.58	G(0.05)	-3.91	
1016		-----		-----	
1022	IP143	12.3		0.47	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095		-----		-----	
1108	IP143	14.1		2.59	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138	IP143	12.5		0.70	
1140	IP143	10.39		-1.78	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	IP143	12.07		0.20	
1205		-----		-----	
1215		-----		-----	
1231	IP143	11.734		-0.20	
1233	IP143	11.08		-0.97	
1259	IP143	11.32		-0.68	
1264	IP143	13.0		1.29	
1269		-----		-----	
1271	D3279	12.525		0.73	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428		-----		-----	
1431	D6560	11.64		-0.31	
1510		-----		-----	
1520	IP143	10.23		-1.97	
1621	D3279	12.5		0.70	
1631		-----		-----	
1633		-----		-----	
1635	D6560	11.50		-0.47	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707		-----		-----	
1710	IP143	11.9		0.00	
1712		-----		-----	
1720		-----		-----	
1724	IP143	10.33		-1.85	
1728	D6560	11.97		0.08	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP143	11.54		-0.42	
1842	IP143	12.2		0.35	
1849		-----		-----	
1854	IP143	12.0		0.12	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948		-----		-----	
2129	IP143	10.85	C	-1.24	First reported 9.55
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	27	40
outliers	1	1
mean (n)	11.901	11.903
st.dev. (n)	0.9020	0.7488
R(calc.)	2.526	2.097
R(IP143:04)	2.380	2.381

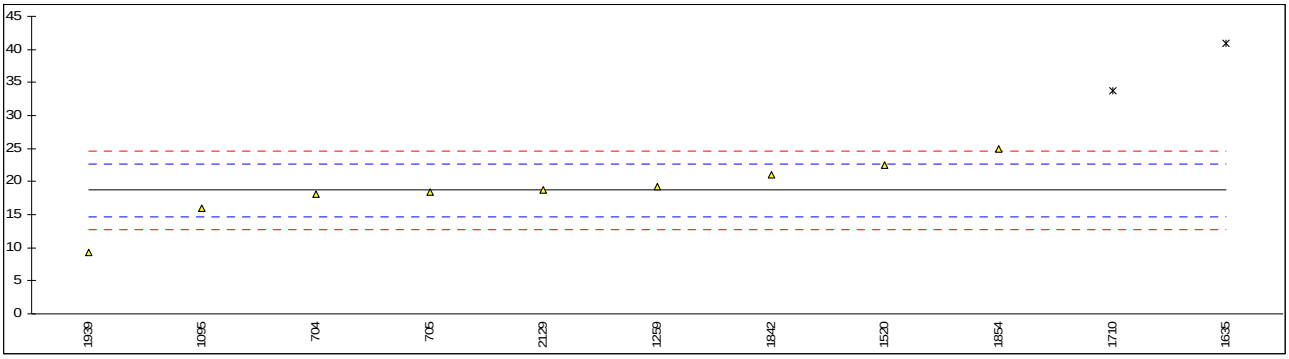


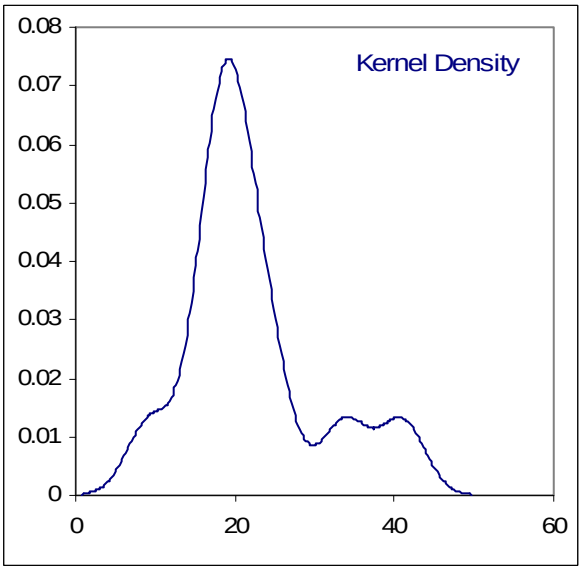


Determination of Bromine Number on sample #1003; results in g Br/100g

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
593		-----		-----	
622		-----		-----	
704	D1159	18.11		-0.29	
705	D1159	18.43		-0.13	
1011		-----		-----	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095	D1159	16.0		-1.35	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138		-----		-----	
1140		-----		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259	D1159	19.3		0.30	
1264		-----		-----	
1269		-----		-----	
1271		-----		-----	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428		-----		-----	
1431		-----		-----	
1510		-----		-----	
1520	D1159	22.44		1.87	
1621		-----		-----	
1631		-----		-----	
1633		-----		-----	
1635	D1159	41	DG(0.05)	11.17	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707		-----		-----	
1710	D1159	33.78	DG(0.05)	7.55	
1712		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833		-----		-----	
1842	D1159	21		1.15	
1849		-----		-----	
1854	D1159	25.0		3.16	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D1159	9.2993		-4.71	
1942		-----		-----	
1948		-----		-----	
2129	D1159	18.7		0.00	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	9	8
outliers	2	1
mean (n)	18.70	18.42
st.dev. (n)	4.408	1.158
R(calc.)	12.34	3.24
R(D1159:07)	5.59	5.53

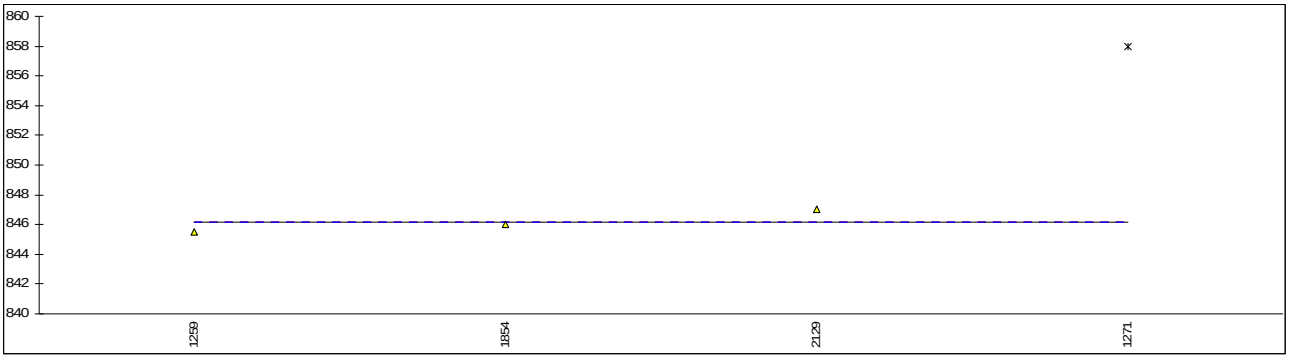




Determination of Calc. Carbon Aromaticity Index on sample #1003;

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
593		-----		-----	
622		-----		-----	
704		-----		-----	
705		-----		-----	
1011		-----		-----	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095		-----		-----	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138		-----		-----	
1140		-----		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259		845.5		-----	
1264		-----		-----	
1269		-----		-----	
1271		858	G(0.05)	-----	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428		-----		-----	
1431		-----		-----	
1510		-----		-----	
1520		-----		-----	
1621		-----		-----	
1631		-----		-----	
1633		-----		-----	
1635		-----		-----	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707		-----		-----	
1710		-----		-----	
1712		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833		-----		-----	
1842		-----		-----	
1849		-----		-----	
1854		846		-----	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948		-----		-----	
2129		847		-----	
2160		-----		-----	
7003		-----		-----	

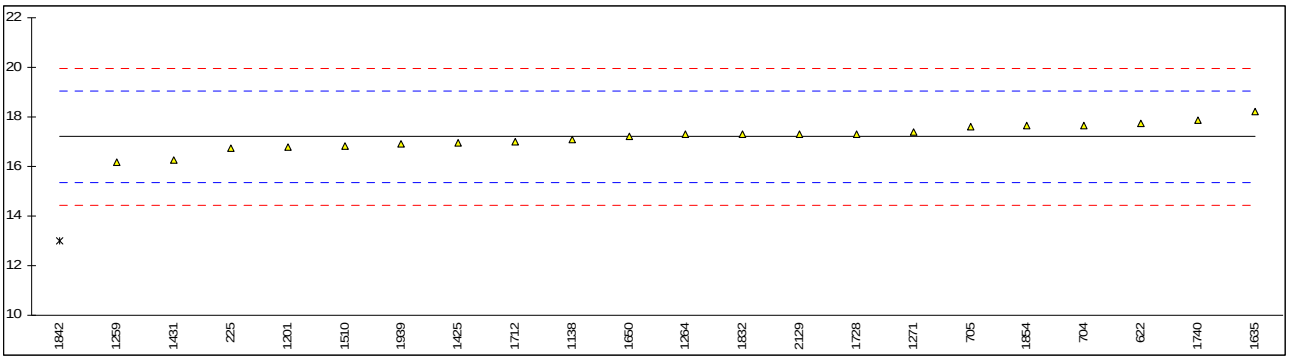
		Compare with October 2009 #0977
normality	n.a.	OK
n	3	23
outliers	1	0
mean (n)	846.17	845.55
st.dev. (n)	0.764	0.569
R(calc.)	2.12	1.59
R(lit)	unknown	unknown

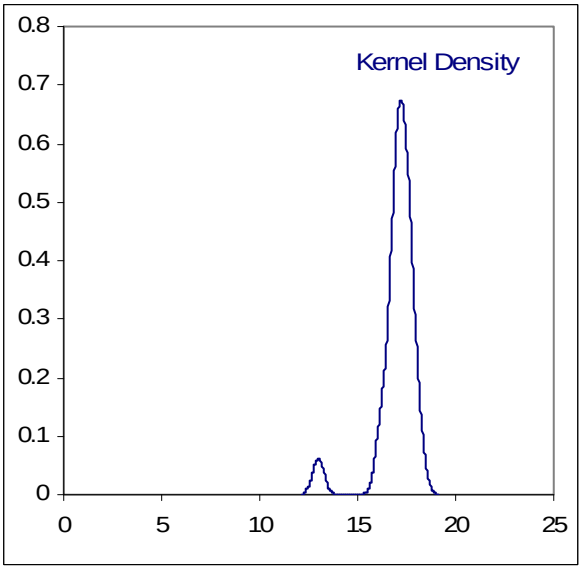


Determination of Conradson Carbon Residue on sample #1003; results in %M/M

lab	method	value	mark	z(targ)	remarks
225	D189	16.73		-0.52	
463		-----		-----	
495		-----		-----	
593		-----		-----	
622	D189	17.76		0.60	
704	D189	17.66		0.49	
705	D189	17.63		0.46	
1011		-----		-----	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095		-----		-----	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138	IP13	17.1		-0.12	
1140		-----		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	D189	16.8		-0.44	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259	D189	16.19		-1.11	
1264	D189	17.3		0.10	
1269		-----		-----	
1271	ISO6615	17.38		0.19	
1275		-----		-----	
1419		-----		-----	
1425	In house	16.96	C	-0.27	First reported 19.86
1427		-----		-----	
1428		-----		-----	
1431	D524	16.28		-1.01	
1510	D189	16.83		-0.41	
1520		-----		-----	
1621		-----		-----	
1631		-----		-----	
1633		-----		-----	
1635	D189	18.20		1.08	
1636		-----		-----	
1650	D189	17.21		0.00	
1654		-----		-----	
1707		-----		-----	
1710		-----		-----	
1712	In house	17.00		-0.23	
1720		-----		-----	
1724		-----		-----	
1728	D189	17.32		0.12	
1740	D189	17.888		0.74	
1810		-----		-----	
1811		-----		-----	
1832	ISO6615	17.3		0.10	
1833		-----		-----	
1842	D189	13.0	G(0.01)	-4.57	
1849		-----		-----	
1854	D189	17.65		0.48	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D189	16.9010		-0.33	
1942		-----		-----	
1948		-----		-----	
2129	IP398	17.31		0.11	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	21	30
outliers	1	1
mean (n)	17.210	17.301
st.dev. (n)	0.5022	0.8604
R(calc.)	1.406	2.409
R(D189:06e2)	2.580	2.718

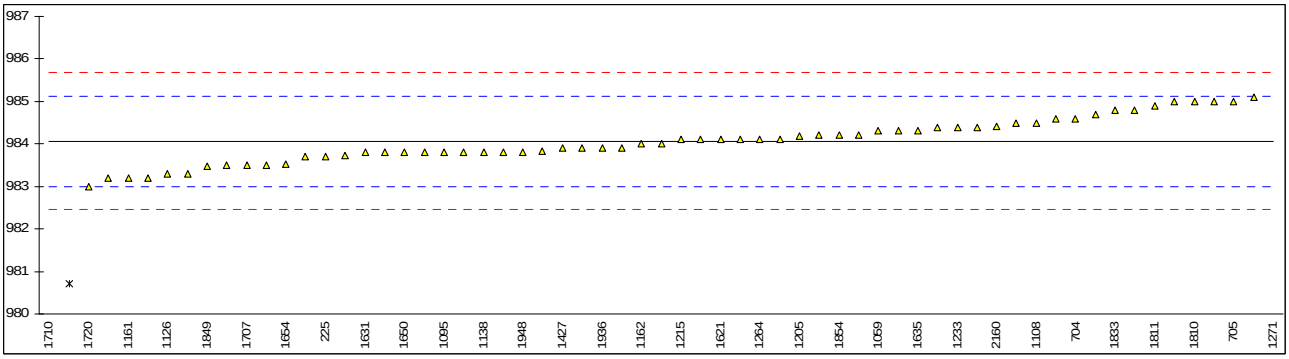


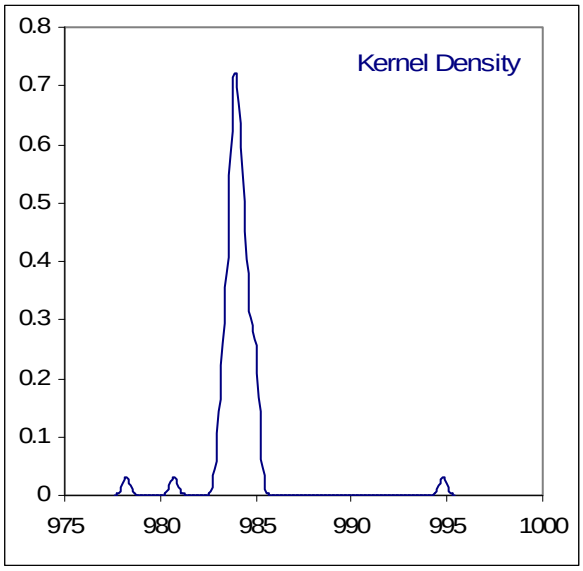


Determination of Density @ 15 °C on sample #1003; results in kg/m^3

lab	method	value	mark	z(targ)	remarks
225	D4052	983.7		-0.68	
463	ISO12185	983.72		-0.64	
495	ISO12185	984.8	C	1.37	First reported 975.7
593		-----		-----	
622	D4052	984.0		-0.12	
704	ISO12185	984.6	C	1.00	First reported 0.9846
705	D1298	985.0		1.75	
1011	ISO12185	985.0		1.75	
1013		-----		-----	
1016		-----		-----	
1022	ISO12185	983.8	C	-0.49	First reported 0.9838
1038	D4052	984.4		0.63	
1040	ISO12185	984.3	C	0.44	First reported 946.7
1059	ISO12185	984.3		0.44	
1065		-----		-----	
1081	ISO12185	984.1		0.07	
1095	ISO12185	983.8		-0.49	
1108	D1298	984.5		0.81	
1126	in house	983.3		-1.43	
1131	ISO12185	984.6		1.00	
1134	IP365	983.8	C	-0.49	First reported 0.9838
1138	IP365	983.8		-0.49	
1140	D4052	984.2	C	0.25	First reported 0.9842
1161	ISO3675	983.2	C	-1.61	First reported 978.2
1162	D1298	984.0		-0.12	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	ISO12185	983.9		-0.31	
1205	ISO12185	984.18		0.22	
1215	D1298	984.1	C	0.07	First reported 0.9841
1231	D1298	984.1		0.07	
1233	ISO12185	984.4		0.63	
1259	ISO3675	983.2		-1.61	
1264	D4052	984.1		0.07	
1269		-----		-----	
1271	ISO12185	994.8	CG(0.01)	20.04	First reported 0.9948
1275	IP365	984.4		0.63	
1419		-----		-----	
1425	IN HOUSE	985		1.75	
1427	D1298	983.9	C	-0.31	First reported 0.9839
1428	ISO12185	983.5		-1.05	
1431	D4052	984.10		0.07	
1510	ISO12185	983.5	C	-1.05	First reported 0.9835
1520	ISO12185	983.82		-0.45	
1621	ISO12185	984.1		0.07	
1631	ISO12185	983.8		-0.49	
1633		-----		-----	
1635	ISO12185	984.3		0.44	
1636	ISO12185	983.8		-0.49	
1650	D4052	983.8		-0.49	
1654	ISO12185	983.52	C	-1.01	First reported 0.98352
1707	ISO12185	983.5	C	-1.05	First reported 982.0
1710	ISO12185	978.2	G(0.05)	-10.95	
1712	ISO12185	985.1		1.93	
1720	D4052	983.0		-1.99	
1724	D1298	980.7	G(0.01)	-6.28	
1728	D4052	983.7		-0.68	
1740	ISO3675	983.2		-1.61	
1810	ISO12185	985.0		1.75	
1811	ISO12185	984.9		1.56	
1832	ISO12185	984.2		0.25	
1833	ISO12185	984.8		1.37	
1842		-----		-----	
1849	ISO12185	983.466		-1.12	
1854	ISO12185	984.2		0.25	
1906		-----		-----	
1936	ISO12185	983.9		-0.31	
1937	ISO12185	983.9		-0.31	
1938	ISO12185	983.8		-0.49	
1939	D4052	983.3		-1.43	
1942		-----		-----	
1948	ISO12185	983.8		-0.49	
2129	D4052	984.7		1.19	
2160	ISO12185	984.41		0.65	
7003	D4052	984.5		0.81	

		Compare with October 2009 #0977
normality	OK	not OK
n	60	80
outliers	3	4
mean (n)	984.06	983.97
st.dev. (n)	0.517	0.476
R(calc.)	1.45	1.33
R(ISO12185:96)	1.50	1.50



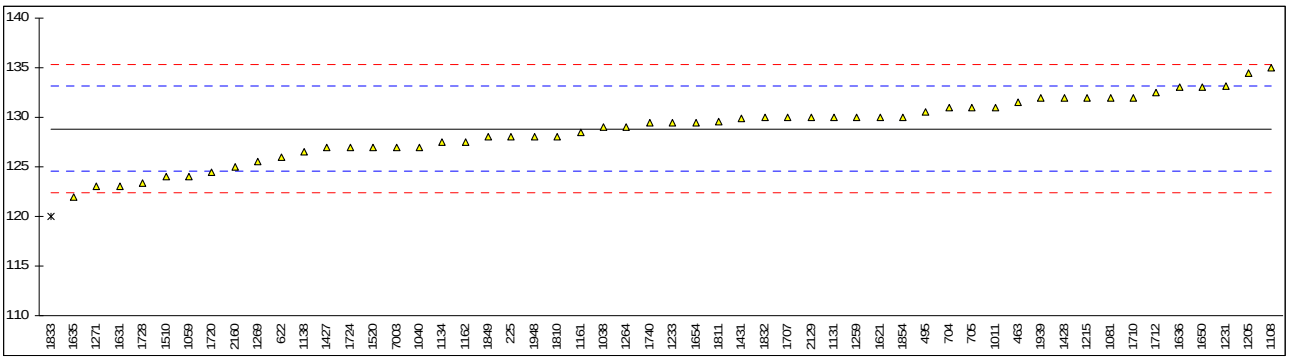


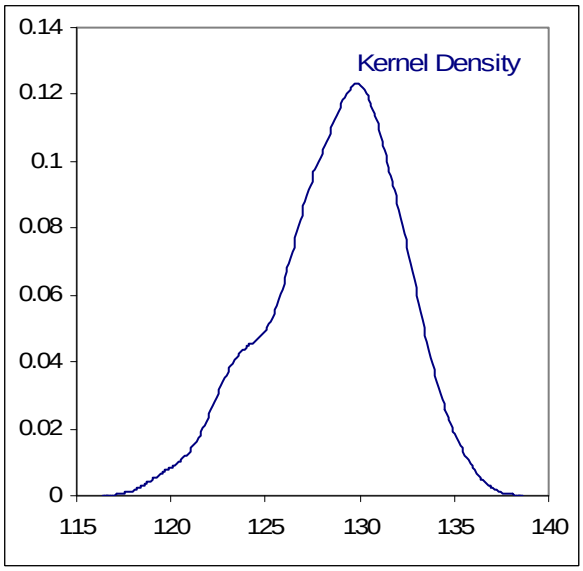
Determination of Flash Point PMcc on sample #1003; results in °C

lab	method	value	mark	z(targ)	remarks
225	D93-	128.0		-0.40	
463	D93-AE	131.5		1.23	
495	D93-AF	130.5		0.77	
593		-----		-----	
622	D93-MF	126.0		-1.33	
704	D93-	131.0		1.00	
705	D93-	131.0		1.00	
1011	D93-AE	131.0		1.00	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038	D93-AE	129.0		0.07	
1040	EN2217	127		-0.87	
1059	ISO2719AE	124.0		-2.27	
1065		-----		-----	
1081	D93-	132		1.47	
1095		-----		-----	
1108	D93-AE	135.0		2.87	
1126		-----		-----	
1131	D93-AE	130.0		0.53	
1134	IP34	127.5		-0.63	
1138	D93-AF	126.5		-1.10	
1140	D93-	>100.0		-----	
1161	ISO2719AE	128.5		-0.17	
1162	D93-MF	127.5		-0.63	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	D93-AE	>110.0		-----	
1205	D93-AF	134.5		2.63	
1215	D93-	132.0		1.47	
1231	D93-AF	133.1		1.98	
1233	ISO2719AE	129.5		0.30	
1259	D93-MF	130.0		0.53	
1264	D93-	129		0.07	
1269	D93-AE	125.5		-1.57	
1271	ISO2719AF	123		-2.73	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427	D93-AE	127.0		-0.87	
1428	ISO2719AE	132.0	C	1.47	First reported 140
1431	D93-AF	129.9		0.49	
1510	D93-MF	124	C	-2.27	First reported 118
1520	D93-MF	127.00		-0.87	
1621	D93-MF	130.0		0.53	
1631	D93-AE	123		-2.73	
1633		-----		-----	
1635	D93-MF	122		-3.20	
1636	D93-AE	133.0		1.93	
1650	D93-AF	133.0		1.93	
1654	D93-AE	129.5		0.30	
1707	ISO2719	130.0		0.53	
1710	ISO2719	132		1.47	
1712	ISO2719-AE	132.5		1.70	
1720	D93-AE	124.5		-2.03	
1724	D93-	127		-0.87	
1728	D93-MF	123.33		-2.58	
1740	ISO2719AE	129.5		0.30	
1810	D93-AF	128.0		-0.40	
1811	D93-	129.6		0.35	
1832	ISO2719	130.0		0.53	
1833	D93-MF	120	G(0.05)	-4.13	
1842		-----		-----	
1849	D93-MF	128.0		-0.40	
1854	D93-MF	130		0.53	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D93-	132		1.47	
1942		-----		-----	
1948	D93-	128		-0.40	
2129	IP34-MF	130.0		0.53	
2160	D93-AE	125		-1.80	
7003	D93-AE	127		-0.87	

		Compare with October 2009 #0977
normality	OK	OK
n	53	83
outliers	1	2
mean (n)	128.86	129.51
st.dev. (n)	3.089	3.051
R(calc.)	8.65	8.54
R(D93:08)	6.00	6.00

	Only Manual Flame	Only Automated Flame	Only Automated Electric
normality	OK	OK	OK
n	11	8	19
outliers	1	0	0
mean (n)	127.08	129.81	128.79
st.dev. (n)	2.927	3.856	3.351
R(calc.)	8.19	10.80	9.38
R(D93:08)	6.00	6.00	6.00

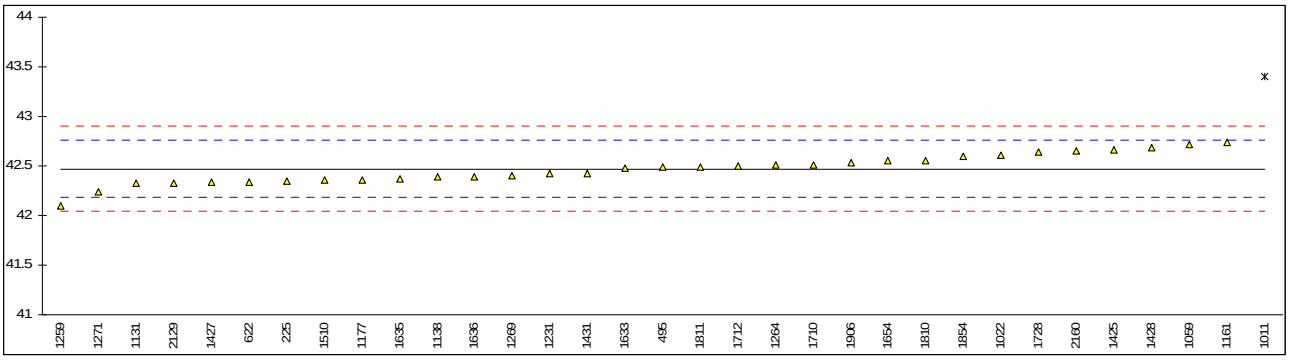


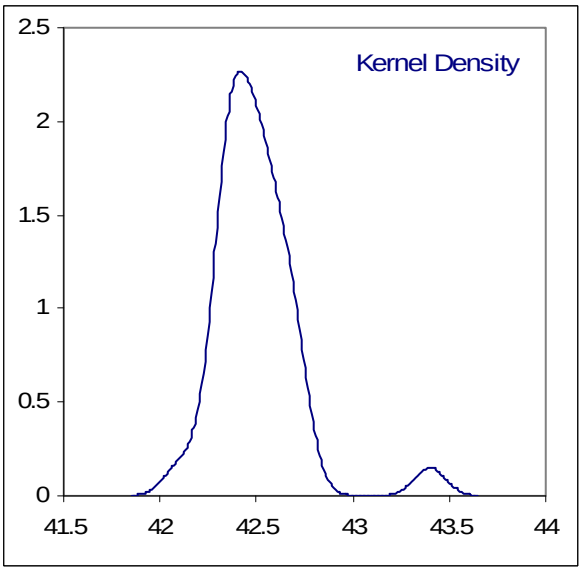


Determination of Heat of Combustion Gross on sample #1003; results in MJ/kg

lab	method	value	mark	z(targ)	remarks
225	D4868	42.35		-0.84	
463		-----		-----	
495	D4868	42.49		0.14	
593		-----		-----	
622	D240	42.34		-0.91	
704		-----		-----	
705		-----		-----	
1011	D240	43.4	G(0.01)	6.51	
1013		-----		-----	
1016		-----		-----	
1022	ISO8217	42.61		0.98	
1038		-----		-----	
1040		-----		-----	
1059	DIN51900	42.712		1.69	
1065		-----		-----	
1081		-----		-----	
1095		-----		-----	
1108		-----		-----	
1126		-----		-----	
1131	D4809	42.3235		-1.03	
1134		-----		-----	
1138	D240	42.3876		-0.58	
1140		-----		-----	
1161	ISO1928	42.739		1.88	
1162		-----		-----	
1175		-----		-----	
1177	DIN51900	42.364		-0.74	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	D240	42.4238		-0.32	
1233		-----		-----	
1259	D240	42.096		-2.62	
1264	D240	42.507		0.26	
1269	DIN51900	42.398		-0.50	
1271	D4868	42.23478		-1.65	
1275		-----		-----	
1419		-----		-----	
1425	In house	42.66		1.33	
1427	D240	42.34		-0.91	
1428	D240	42.69		1.54	
1431	D240	42.425		-0.32	
1510	D240	42.360		-0.77	
1520		-----		-----	
1621		-----		-----	
1631		-----		-----	
1633	D240	42.48		0.07	
1635	D4868	42.369		-0.71	
1636	D4868	42.391		-0.55	
1650		-----		-----	
1654	D240	42.549		0.55	
1707		-----		-----	
1710	D4809	42.510		0.28	
1712	INH-4062	42.5		0.21	
1720		-----		-----	
1724		-----		-----	
1728	ISO8217	42.640		1.19	
1740		-----		-----	
1810	D240	42.555		0.59	
1811	D240	42.4918		0.15	
1832		-----		-----	
1833		-----		-----	
1842		-----		-----	
1849		-----		-----	
1854	D240	42.601		0.92	
1906	D240	42.529		0.41	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948		-----		-----	
2129	IP12	42.329		-0.99	
2160	TS1740	42.6488		1.25	
7003		-----		-----	

		Compare with October 2009 #0977	Only ASTM D240 data:	Only ASTM D4868 data:
normality	OK	not OK	OK	OK
n	32	46	15	7
outliers	1	1	1	0
mean (n)	42.470	42.383	42.452	42.381
st.dev. (n)	0.1476	0.1459	0.1404	0.0952
R(calc.)	0.413	0.409	0.393	0.267
R(D240:09)	0.400	0.400	0.400	0.150

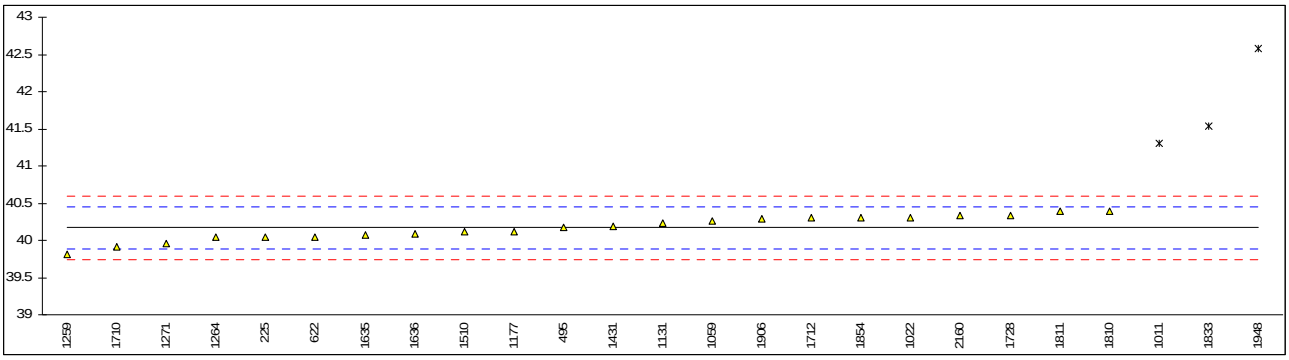


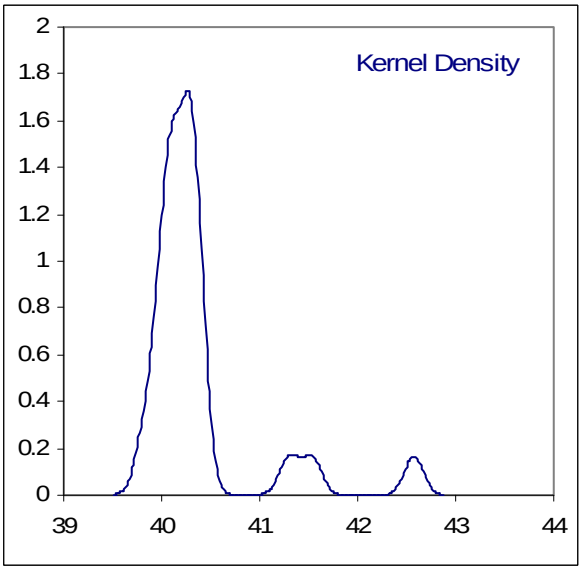


Determination of Heat of Combustion Net on sample #1003; results in MJ/kg

lab	method	value	mark	z(targ)	remarks
225	D4868	40.05		-0.84	
463		-----		-----	
495	D4868	40.17		0.00	
593		-----		-----	
622	D240	40.05		-0.84	
704		-----		-----	
705		-----		-----	
1011	D240	41.3	G(0.01)	7.91	
1013		-----		-----	
1016		-----		-----	
1022	ISO8217	40.31		0.98	
1038		-----		-----	
1040		-----		-----	
1059	DIN51900	40.262		0.65	
1065		-----		-----	
1081		-----		-----	
1095		-----		-----	
1108		-----		-----	
1126		-----		-----	
1131	D4809	40.2340		0.45	
1134		-----		-----	
1138		-----		-----	
1140		-----		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177	DIN51900	40.113		-0.39	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259	D4868	39.808		-2.53	
1264	D4868	40.045		-0.87	
1269		-----		-----	
1271	D4868	39.9598		-1.47	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428		-----		-----	
1431	D240	40.190		0.14	
1510	D240	40.112		-0.40	
1520		-----		-----	
1621		-----		-----	
1631		-----		-----	
1633		-----		-----	
1635	D4868	40.067		-0.72	
1636	D4868	40.086		-0.58	
1650		-----		-----	
1654		-----		-----	
1707		-----		-----	
1710	D4809	39.910		-1.82	
1712	INH-4062	40.3		0.91	
1720		-----		-----	
1724		-----		-----	
1728	ISO8217	40.339		1.19	
1740		-----		-----	
1810	D240	40.396		1.59	
1811	D240	40.3911		1.55	
1832		-----		-----	
1833	D240	41.533	CG(0.01)	9.55	First reported 42.873
1842		-----		-----	
1849		-----		-----	
1854	D240	40.304		0.94	
1906	D240	40.293		0.87	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948	D240	42.574	CG(0.01)	16.83	First reported 51.533
2129		-----		-----	
2160	TS1740	40.3360		1.17	
7003		-----		-----	

		Compare with October 2009 #0977	Only ASTM D240 data:	Only ASTM D4868 data:
normality	OK	not OK	OK	OK
n	22	30	7	9
outliers	3	2	3	0
mean (n)	40.169	40.058	40.248	40.037
st.dev. (n)	0.1619	0.1258	0.1345	0.1297
R(calc.)	0.453	0.352	0.377	0.363
R(D240:09)	0.400	0.400	0.400	0.150

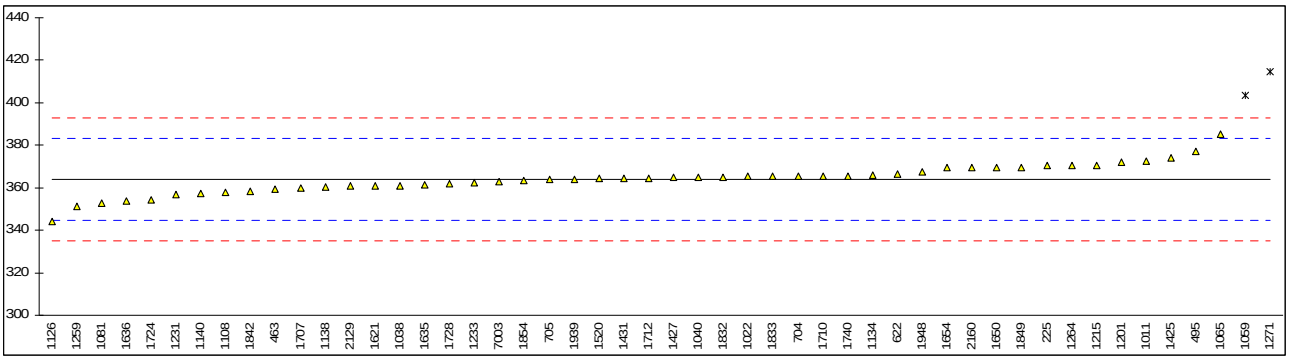


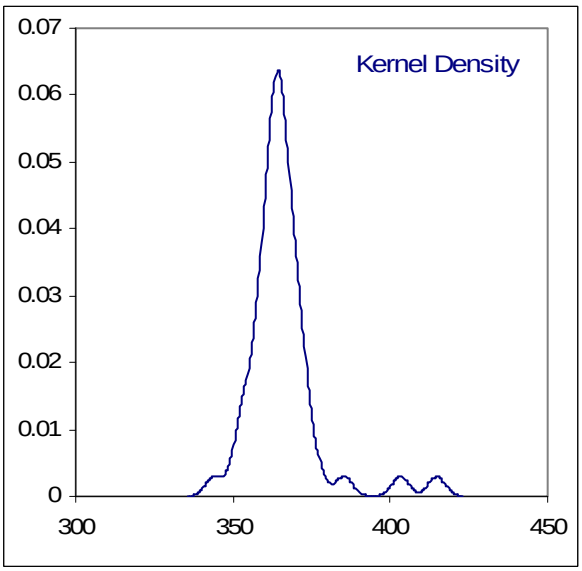


Determination of Kinematic Viscosity @ 50°C on sample #1003; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
225	D445	370.3		0.65	
463	D445	359.60		-0.46	
495	D445	377.0		1.35	
593		-----		-----	
622	D445	366.35		0.24	
704	D445	365.48		0.15	
705	D445	363.68		-0.04	
1011	D445	372.35		0.86	
1013		-----		-----	
1016		-----		-----	
1022	D445	365.2		0.12	
1038	D445	361.01		-0.32	
1040	DIN51562	365.1		0.11	
1059	ISO3104	403.3	G(0.01)	4.08	
1065	D445	385.4	C	2.22	First reported 398.3
1081	D445	352.7		-1.18	
1095		-----		-----	
1108	D445	357.9		-0.64	
1126	D445	344.036		-2.08	
1131		-----		-----	
1134	IP71	366.12		0.21	
1138	IP71	360.6		-0.36	
1140	D445	357.2		-0.71	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	D445	371.9		0.82	
1205		-----		-----	
1215	D445	370.74		0.69	
1231	D445	356.75		-0.76	
1233	ISO3104	362.3		-0.18	
1259	D445	351.4006		-1.32	
1264	D445	370.7		0.69	
1269		-----		-----	
1271	ISO3104	414.8267	G(0.01)	5.28	
1275		-----		-----	
1419		-----		-----	
1425	IN HOUSE	374.21		1.06	
1427	D445	364.95		0.09	
1428		-----		-----	
1431	D7042	364.5		0.05	
1510		-----		-----	
1520	D445	364.34		0.03	
1621	D445	361.0		-0.32	
1631		-----		-----	
1633		-----		-----	
1635	D445	361.5		-0.27	
1636	D445	353.60		-1.09	
1650	D445	369.51		0.57	
1654	D445	369.38		0.55	
1707	ISO3104	359.95		-0.43	
1710	D445	365.5		0.15	
1712	ISO3104	364.5		0.05	
1720		-----		-----	
1724	D445	354.1		-1.03	
1728	D445	361.7		-0.25	
1740	ISO3104	365.651		0.17	
1810		-----		-----	
1811		-----		-----	
1832	ISO3104	365.100		0.11	
1833	D445	365.4		0.14	
1842	IP71	358.3		-0.60	
1849	D445	369.532		0.57	
1854	D445	363.5		-0.06	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D445	364.0		-0.01	
1942		-----		-----	
1948	D445	367.45		0.35	
2129	D445	360.67		-0.35	
2160	D445	369.5		0.57	
7003	D445	363.11		-0.10	

		Compare with October 2009 #0977
normality	OK	not OK
n	48	78
outliers	2	5
mean (n)	364.058	363.789
st.dev. (n)	6.9975	6.0594
R(calc.)	19.593	16.966
R(D445:09)	26.940	26.920

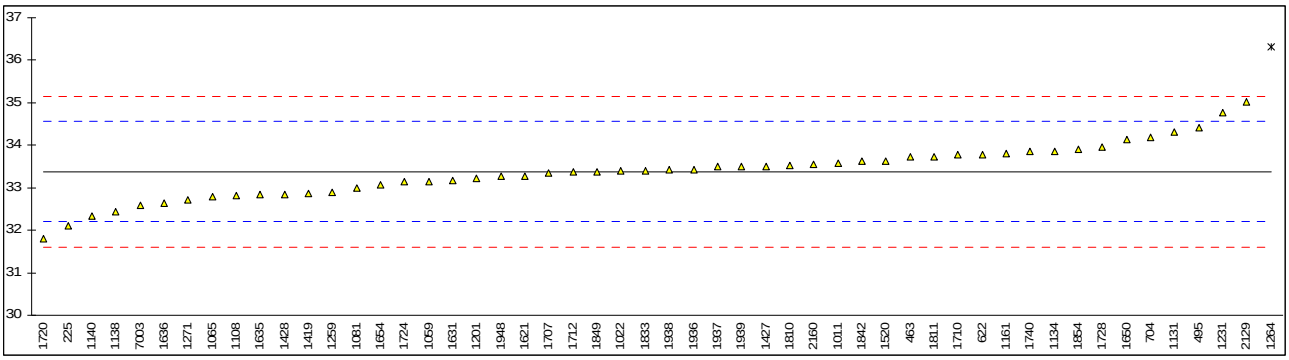


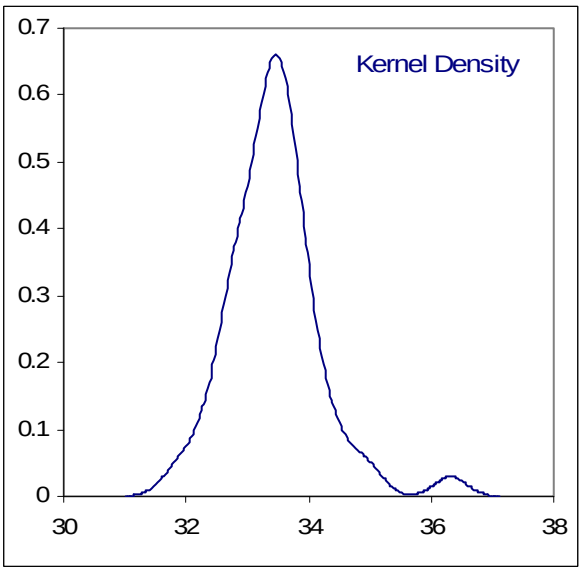


Determination of Kinematic Viscosity @ 100°C on sample #1003; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
225	D445	32.10		-2.16	
463	D445	33.736		0.60	
495	D445	34.42		1.76	
593		-----		-----	
622	D445	33.78		0.68	
704	D445	34.180		1.36	
705		-----		-----	
1011	D445	33.570		0.32	
1013		-----		-----	
1016		-----		-----	
1022	D445	33.40		0.04	
1038		-----		-----	
1040		-----		-----	
1059	ISO3104	33.15		-0.39	
1065	D445	32.79		-1.00	
1081	D445	33.00		-0.64	
1095		-----		-----	
1108	D445	32.81		-0.96	
1126		-----		-----	
1131	ISO3104	34.313		1.58	
1134	IP71	33.85		0.80	
1138	IP71	32.43		-1.60	
1140	D445	32.34		-1.76	
1161	ISO3104	33.81		0.73	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	D445	33.22		-0.27	
1205		-----		-----	
1215		-----		-----	
1231	D445	34.76		2.34	
1233		-----		-----	
1259	D445	32.8924		-0.82	
1264	D445	36.32	G(0.01)	4.98	
1269		-----		-----	
1271	ISO3104	32.7069		-1.14	
1275		-----		-----	
1419	D445	32.856		-0.88	
1425		-----		-----	
1427	D445	33.501		0.21	
1428	ISO3104	32.85		-0.89	
1431		-----		-----	
1510		-----		-----	
1520	D445	33.637		0.44	
1621	D445	33.28		-0.17	
1631	D445	33.18		-0.34	
1633		-----		-----	
1635	D445	32.83		-0.93	
1636	D445	32.645		-1.24	
1650	D445	34.146		1.30	
1654	D445	33.07		-0.52	
1707	ISO3104	33.34	C	-0.07	First reported 35.11
1710	D445	33.77		0.66	
1712	ISO3104	33.37		-0.01	
1720	D445	31.80		-2.67	
1724	D445	33.147		-0.39	
1728	D445	33.95		0.97	
1740	ISO3104	33.846		0.79	
1810	D445	33.52		0.24	
1811	D445	33.7408		0.61	
1832		-----		-----	
1833	D445	33.4		0.04	
1842	IP71	33.63		0.43	
1849	D445	33.382		0.01	
1854	D445	33.9		0.88	
1906		-----		-----	
1936	ISO3104	33.42		0.07	
1937	ISO3104	33.50		0.21	
1938	D445	33.418		0.07	
1939	D445	33.5		0.21	
1942		-----		-----	
1948	D445	33.28		-0.17	
2129	D445	35.01		2.76	
2160	D445	33.55		0.29	
7003	D445	32.578		-1.35	

		Compare with October 2009 #0977
normality	OK	not OK
n	51	58
outliers	1	1
mean (n)	33.379	33.696
st.dev. (n)	0.6284	0.5520
R(calc.)	1.760	1.545
R(D445:09)	1.655	1.668

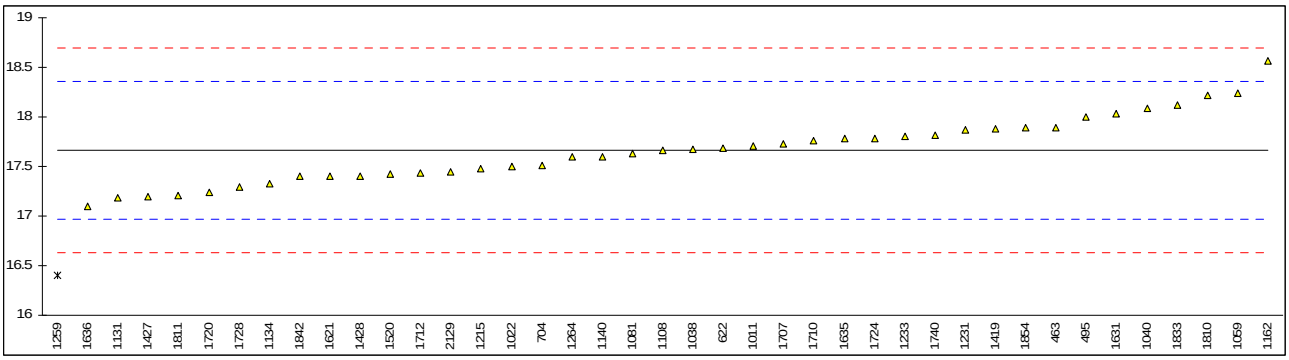


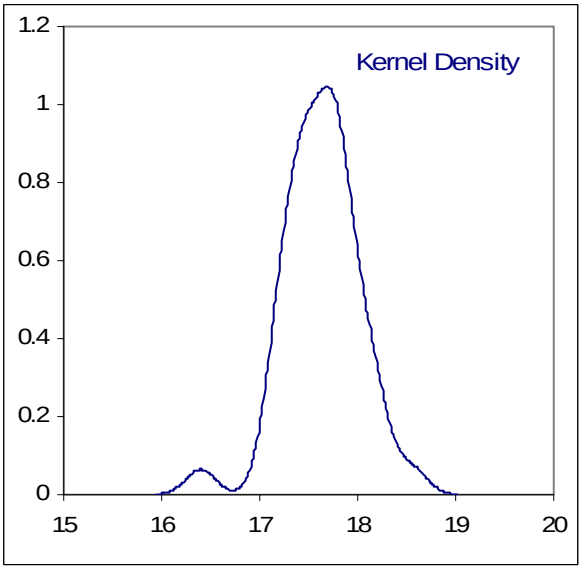


Determination of Micro Carbon Residue on sample #1003; results in %M/M

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463	D4530	17.89		0.66	
495	D4530	18.0		0.97	
593		-----		-----	
622	D4530	17.68		0.05	
704	D4530	17.51		-0.44	
705		-----		-----	
1011	D4530	17.71		0.13	
1013		-----		-----	
1016		-----		-----	
1022	D4530	17.5		-0.47	
1038	D4530	17.67		0.02	
1040	ISO10370	18.09		1.23	
1059	ISO10370	18.24		1.67	
1065		-----		-----	
1081	ISO10370	17.63		-0.10	
1095		-----		-----	
1108	D4530	17.66		-0.01	
1126		-----		-----	
1131	D4530	17.19		-1.37	
1134	D4530	17.33		-0.97	
1138		-----		-----	
1140	D4530	17.6		-0.18	
1161		-----		-----	
1162	D4530	18.56		2.60	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215	D4530	17.476		-0.54	
1231	D4530	17.87		0.60	
1233	ISO10370	17.8		0.40	
1259	D4530	16.40	G(0.05)	-3.66	
1264	D4530	17.6		-0.18	
1269		-----		-----	
1271		-----		-----	
1275		-----		-----	
1419	D4530	17.8771		0.62	
1425		-----		-----	
1427	D4530	17.2		-1.34	
1428	ISO10370	17.4		-0.76	
1431		-----		-----	
1510		-----		-----	
1520	D4530	17.42		-0.70	
1621	D4530	17.40		-0.76	
1631	D4530	18.03		1.06	
1633		-----		-----	
1635	D4530	17.78		0.34	
1636	D4530	17.10		-1.63	
1650		-----		-----	
1654		-----		-----	
1707	ISO10370	17.73		0.19	
1710	ISO10370	17.76		0.28	
1712	ISO10370	17.43		-0.68	
1720	D4530	17.24		-1.23	
1724	D4530	17.78		0.34	
1728	D4530	17.29		-1.08	
1740	ISO10370	17.812		0.43	
1810	D4530	18.22		1.61	
1811	D4530	17.203		-1.33	
1832		-----		-----	
1833	D4530	18.12	C	1.32	First reported 19.2
1842	D4530	17.4		-0.76	
1849		-----		-----	
1854	D4530	17.89		0.66	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948		-----		-----	
2129	IP398	17.45		-0.62	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	not OK
n	40	53
outliers	1	0
mean (n)	17.664	17.572
st.dev. (n)	0.3289	0.3680
R(calc.)	0.921	1.030
R(D4530:07)	0.967	0.963

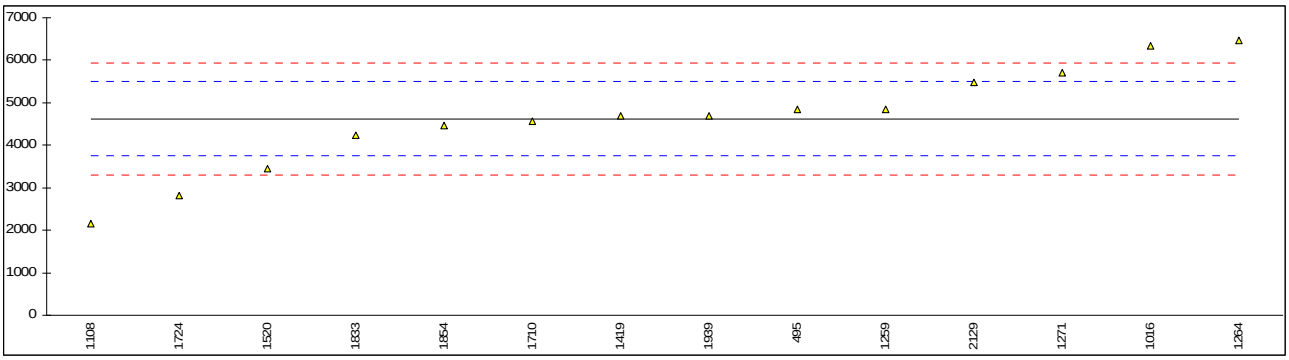


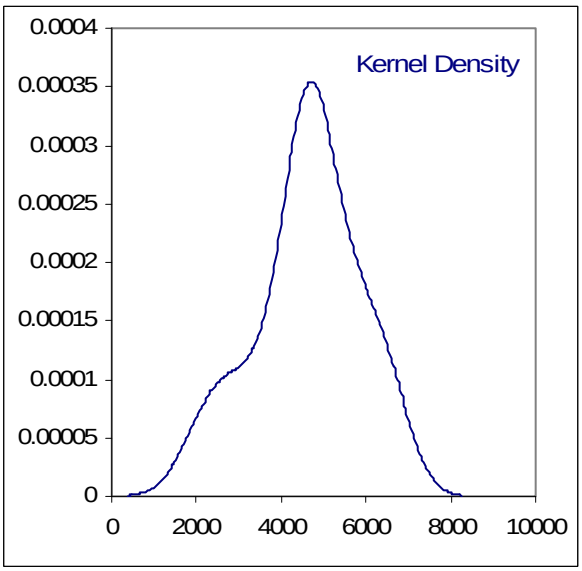


Determination of Nitrogen on sample #1003; results in µg/g

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495	D5762	4837		0.48	
593		-----		-----	
622		-----		-----	
704		-----		-----	
705		-----		-----	
1011		-----		-----	
1013		-----		-----	
1016	D5762	6351		3.92	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095		-----		-----	
1108	D4629	2154		-5.63	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138		-----		-----	
1140		-----		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259	UOP384	4841.86		0.49	
1264	D5762	6474		4.20	
1269		-----		-----	
1271	D3228	5710		2.47	
1275		-----		-----	
1419	D5762	4687.5		0.14	
1425		-----		-----	
1427		-----		-----	
1428		-----		-----	
1431		-----		-----	
1510		-----		-----	
1520	D5762	3449.4		-2.68	
1621		-----		-----	
1631		-----		-----	
1633		-----		-----	
1635		-----		-----	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707		-----		-----	
1710	D5762	4565		-0.14	
1712		-----		-----	
1720		-----		-----	
1724	D4629	2817		-4.12	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	D5762	4240		-0.88	
1842	IN HOUSE	<0.1		-----	False negative?
1849		-----		-----	
1854	D5762	4459		-0.38	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D4629	4695	C	0.16	First reported 1564.73
1942		-----		-----	
1948		-----		-----	
2129	D3228	5485		1.95	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977	Only ASTM D5762 data:
normality	OK	OK	OK
n	14	16	8
outliers	0	1	0
mean (n)	4626	4622	4883
st.dev. (n)	1220.1	577.6	1033.5
R(calc.)	3416	1617	2894
R(D5762:08)	1231	1229	1299





Determination of Total Organic Chlorides on sample #1003; results in mg/kg

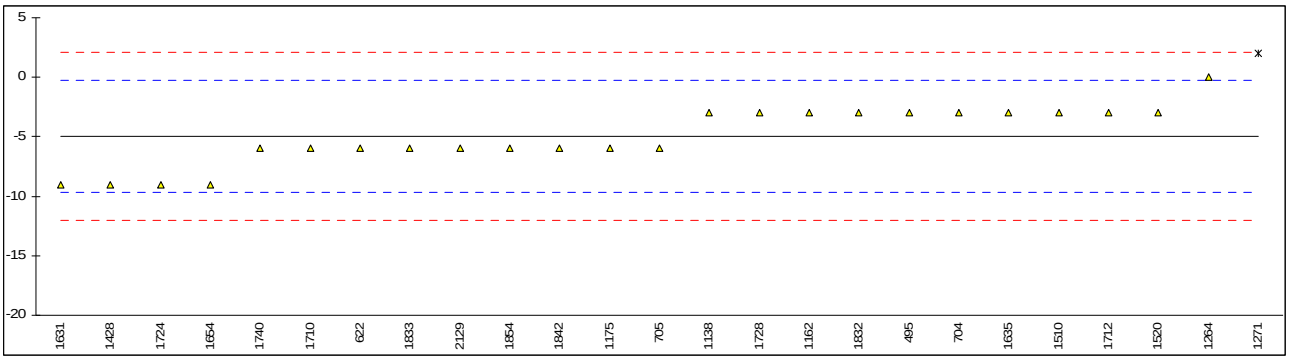
lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
593		-----		-----	
622		-----		-----	
704		-----		-----	
705		-----		-----	
1011		-----		-----	
1013		-----		-----	
1016	INH-2296	19.9		-----	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081	D5808	12.24		-----	
1095		-----		-----	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138		-----		-----	
1140		-----		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259		-----		-----	
1264		-----		-----	
1269		-----		-----	
1271		-----		-----	
1275		-----		-----	
1419		-----		-----	
1425	IN HOUSE	<1000		-----	
1427		-----		-----	
1428		-----		-----	
1431		-----		-----	
1510		-----		-----	
1520		-----		-----	
1621		-----		-----	
1631		-----		-----	
1633		-----		-----	
1635		-----		-----	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707		-----		-----	
1710		-----		-----	
1712		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833		-----		-----	
1842		-----		-----	
1849		-----		-----	
1854		-----		-----	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948		-----		-----	
2129		-----		-----	
2160		-----		-----	
7003		-----		-----	

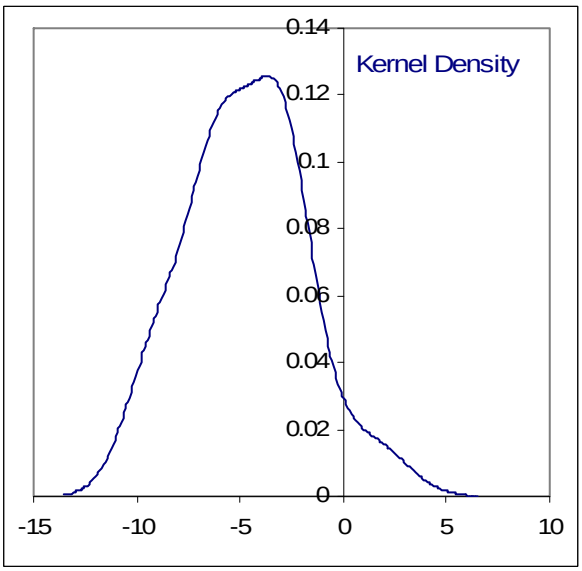
normality	n.a.
n	2
outliers	0
mean (n)	n.a.
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D6443:04)	n.a.

Determination of Pour Point (Lower) on sample #1003; results in °C

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495	D97	-3		0.85	
593		-----		-----	
622	D97	-6		-0.42	
704	D97	-3		0.85	
705	D97	-6		-0.42	
1011		-----		-----	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095		-----		-----	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138	IP15	-3		0.85	
1140		-----		-----	
1161		-----		-----	
1162	D97	-3.0		0.85	
1175	D97	-6		-0.42	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259		-----		-----	
1264	D97	0		2.12	
1269		-----		-----	
1271	D97	2	D(0.05)	2.97	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428	ISO3016	-9		-1.70	
1431		-----		-----	
1510	D97	-3		0.85	
1520	D97	-3		0.85	
1621		-----		-----	
1631	D97	-9		-1.70	
1633		-----		-----	
1635	D97	-3		0.85	
1636		-----		-----	
1650		-----		-----	
1654	D97	-9.0		-1.70	
1707		-----		-----	
1710	D97	-6		-0.42	
1712	ISO3016	-3		0.85	
1720		-----		-----	
1724	D97	-9		-1.70	
1728	D97	-3		0.85	
1740	ISO3016	-6		-0.42	
1810		-----		-----	
1811		-----		-----	
1832	ISO3016	-3		0.85	
1833	D97	-6		-0.42	
1842	D97	-6		-0.42	
1849		-----		-----	
1854	D97	-6		-0.42	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948		-----		-----	
2129	D97	-6		-0.42	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	not OK	not OK
n	24	45
outliers	1	0
mean (n)	-5.00	-5.67
st.dev. (n)	2.449	2.739
R(calc.)	6.86	7.67
R(D97:08)	6.60	6.60

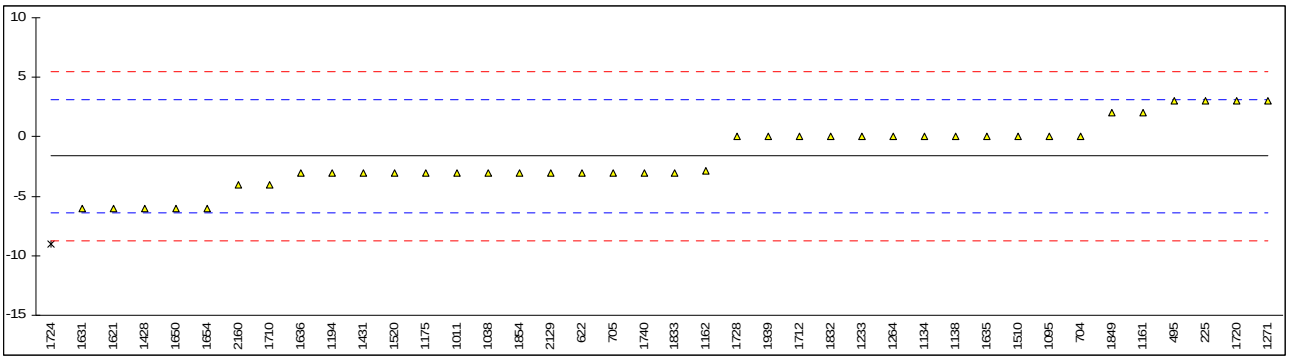


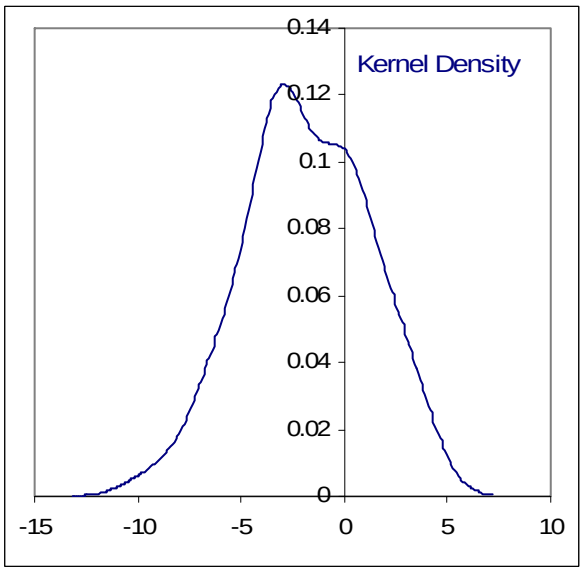


Determination of Pour Point (Upper) on sample #1003; results in °C

lab	method	value	mark	z(targ)	remarks
225	D97	3		1.97	
463		-----		-----	
495	D97	3		1.97	
593		-----		-----	
622	D97	-3		-0.58	
704	D97	0		0.70	
705	D97	-3		-0.58	
1011	D97	-3		-0.58	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038	D97	-3		-0.58	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095	D97	0		0.70	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134	IP15	0		0.70	
1138	IP15	0		0.70	
1140		-----		-----	
1161	ISO3016	2		1.54	
1162	D97	-2.9		-0.54	
1175	D97	-3		-0.58	
1177		-----		-----	
1194	D97	-3		-0.58	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233	D97	0		0.70	
1259		-----		-----	
1264	D97	0		0.70	
1269		-----		-----	
1271	D97	3		1.97	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428	ISO3016	-6		-1.85	
1431	D97	-3		-0.58	
1510	D97	0		0.70	
1520	D97	-3		-0.58	
1621	D97	-6		-1.85	
1631	D97	-6		-1.85	
1633		-----		-----	
1635	D97	0		0.70	
1636	D97	-3		-0.58	
1650	D97	-6		-1.85	
1654	D97	-6.0		-1.85	
1707		-----		-----	
1710	D97	-4		-1.00	
1712	ISO3016	0		0.70	
1720	D97	3		1.97	
1724	D97	-9	G(0.05)	-3.12	
1728	D97	0		0.70	
1740	ISO3016	-3		-0.58	
1810		-----		-----	
1811		-----		-----	
1832	ISO3016	0		0.70	
1833	D97	-3		-0.58	
1842		-----		-----	
1849	D97	2		1.54	
1854	D97	-3		-0.58	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D97	0		0.70	
1942		-----		-----	
1948		-----		-----	
2129	D97	-3		-0.58	
2160	D97	-4.0		-1.00	
7003		-----		-----	

		Compare with October 2009 #0977
normality	not OK	not OK
n	39	66
outliers	1	1
mean (n)	-1.64	-2.08
st.dev. (n)	2.699	3.011
R(calc.)	7.56	8.43
R(D97:08)	6.60	6.60

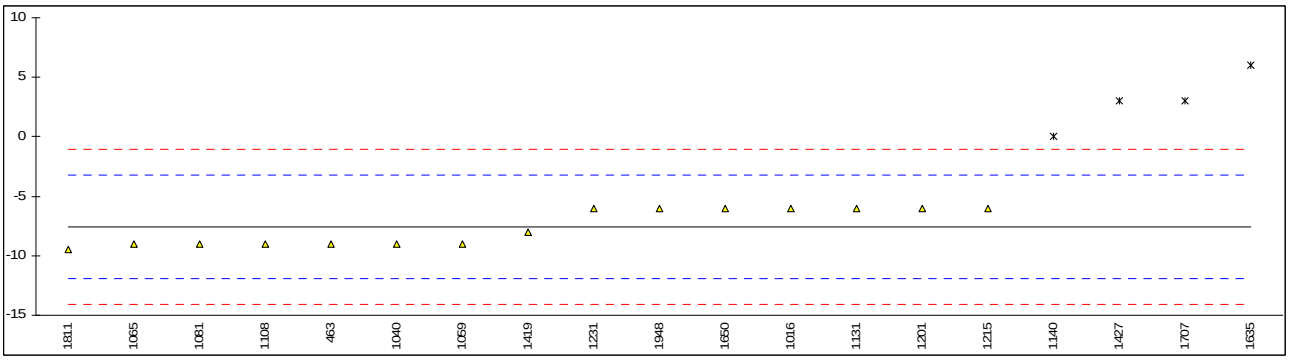


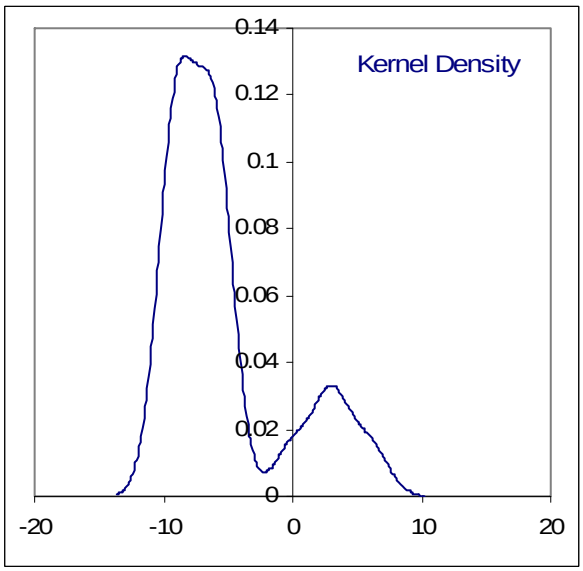


Determination of Pour Point (Automated) on sample #1003; results in ^{o}C

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463	D6892	-9		-0.66	
495		-----		-----	
593		-----		-----	
622		-----		-----	
704		-----		-----	
705		-----		-----	
1011		-----		-----	
1013		-----		-----	
1016	D97	-6		0.72	
1022		-----		-----	
1038		-----		-----	
1040	ISO3016	-9.0		-0.66	
1059	ISO3016	-9		-0.66	
1065	D5950	-9		-0.66	
1081	D5950	-9		-0.66	
1095		-----		-----	
1108	D5950	-9		-0.66	
1126		-----		-----	
1131	ISO3016	-6		0.72	
1134		-----		-----	
1138		-----		-----	
1140	D5950	0	G(0.01)	3.47	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	D97	-6		0.72	
1205		-----		-----	
1215	D5950	-6		0.72	
1231	D5950	-6		0.72	
1233		-----		-----	
1259		-----		-----	
1264		-----		-----	
1269		-----		-----	
1271		-----		-----	
1275		-----		-----	
1419	D97	-8		-0.20	
1425		-----		-----	
1427	D5950	3	DG(0.05)	4.85	
1428		-----		-----	
1431		-----		-----	
1510		-----		-----	
1520		-----		-----	
1621		-----		-----	
1631		-----		-----	
1633		-----		-----	
1635	D97	6	CG(0.05)	6.23	First reported 12
1636		-----		-----	
1650	D5950	-6		0.72	
1654		-----		-----	
1707	ISO3016	3	DG(0.05)	4.85	
1710		-----		-----	
1712		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-9.5		-0.89	
1832		-----		-----	
1833		-----		-----	
1842		-----		-----	
1849		-----		-----	
1854		-----		-----	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948		-6		0.72	
2129		-----		-----	
2160		-----		-----	
7003		-----		-----	

normality	not OK
n	15
outliers	4
mean (n)	-7.57
st.dev. (n)	1.545
R(calc.)	4.33
R(D5950:07)	6.10

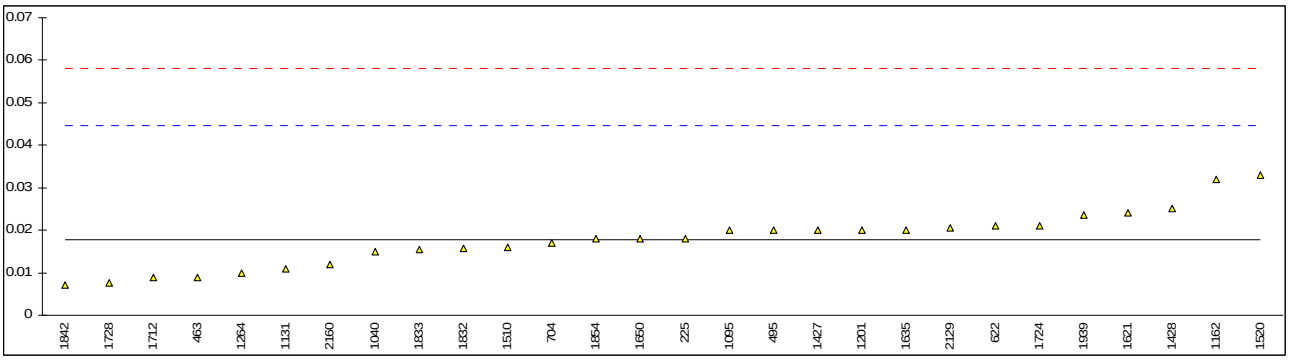


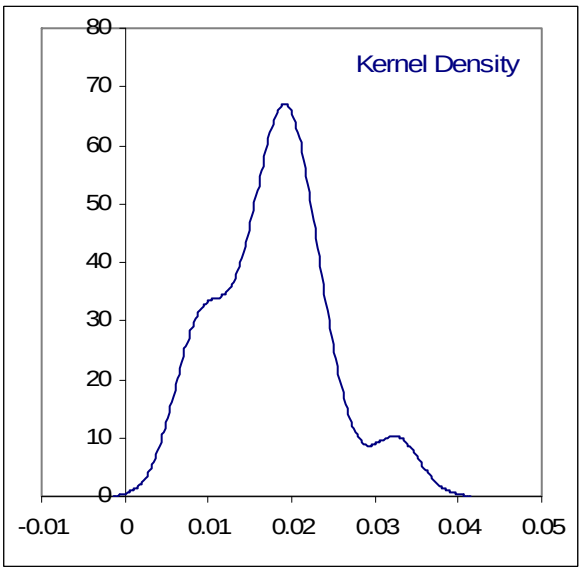


Determination of Sediment by Extraction on sample #1003; results in %M/M

lab	method	value	mark	z(targ)	remarks
225	D473	0.018		0.01	
463	D473	0.009		-0.66	
495	D473	0.02		0.16	
593		-----		-----	
622	D473	0.021		0.24	
704	D473	0.017		-0.06	
705		-----		-----	
1011		-----		-----	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040	ISO3735	0.015		-0.21	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095	D473	0.02		0.16	
1108		-----		-----	
1126		-----		-----	
1131	ISO3735	0.011		-0.51	
1134		-----		-----	
1138	IP53	<0.01		<-0.58	
1140		-----		-----	
1161		-----		-----	
1162	D473	0.032		1.06	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	D473	0.02		0.16	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259		-----		-----	
1264	D473	0.01		-0.58	
1269		-----		-----	
1271		-----		-----	
1275		-----		-----	
1419		-----		-----	
1425	IN HOUSE	<0.1		<6.14	
1427	D473	0.02		0.16	
1428	ISO3735	0.025		0.54	
1431		-----		-----	
1510	D473	0.016		-0.13	
1520	D473	0.033		1.13	
1621	D473	0.024		0.46	
1631		-----		-----	
1633		-----		-----	
1635	D473	0.02		0.16	
1636		-----		-----	
1650	D473	0.018		0.01	
1654		-----		-----	
1707		-----		-----	
1710		-----		-----	
1712	ISO3735	0.009		-0.66	
1720		-----		-----	
1724	D473	0.021		0.24	
1728	D473	0.0076		-0.76	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832	INH6370	0.0156		-0.16	
1833	D473	0.0154		-0.18	
1842	D473	0.007		-0.81	
1849		-----		-----	
1854	D473	0.018		0.01	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	D473	0.0235		0.42	
1942		-----		-----	
1948		-----		-----	
2129	IP53	0.0205		0.20	
2160	D473	0.01197		-0.44	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	28	66
outliers	0	0
mean (n)	0.0178	0.0164
st.dev. (n)	0.00652	0.00827
R(calc.)	0.0182	0.0232
R(D473:07)	0.0375	0.0372

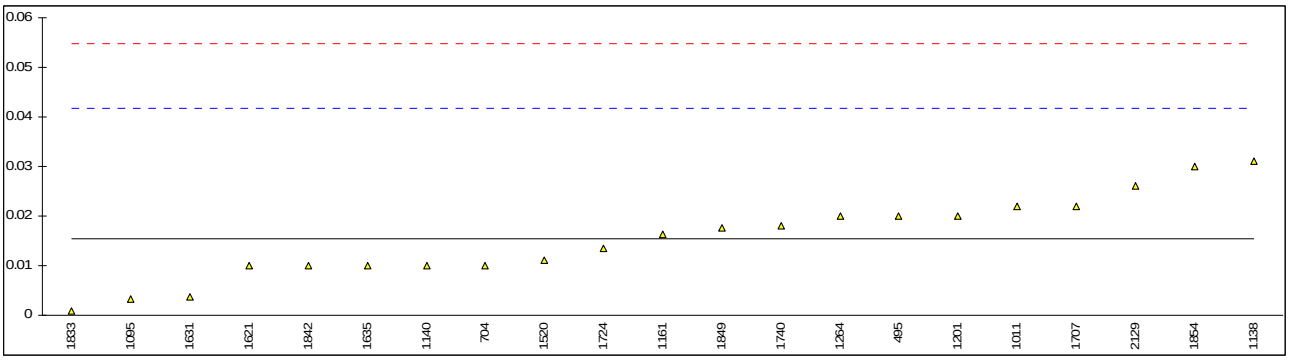


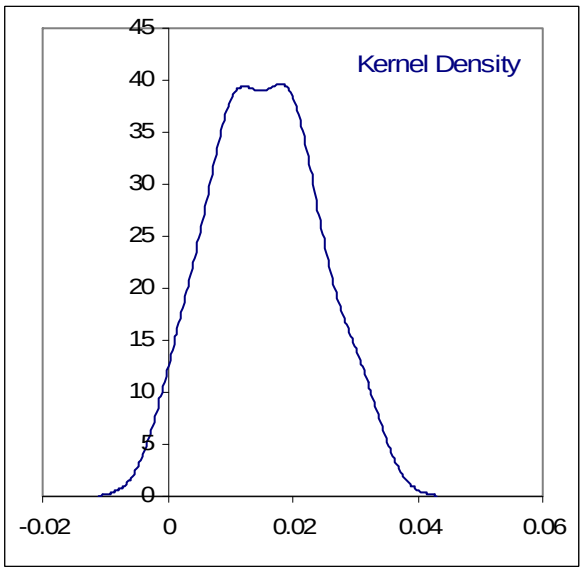


Determination of Total Sediment (Accelerated) of sample #1003; results in %M/M

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495	IP390	0.02		0.34	
593		-----		-----	
622		-----		-----	
704	IP390	0.010		-0.42	
705		-----		-----	
1011	IP390	0.022		0.50	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095	IP390	0.0032		-0.94	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138	IP390	0.031		1.19	
1140	IP390	0.01		-0.42	
1161	IP390	0.0164		0.07	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201	IP390	0.02		0.34	
1205		-----		-----	
1215		-----		-----	
1231		-----		-----	
1233		-----		-----	
1259		-----		-----	
1264	IP390	0.02		0.34	
1269		-----		-----	
1271		-----		-----	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428		-----		-----	
1431		-----		-----	
1510		-----		-----	
1520	IP390	0.011		-0.34	
1621	IP390	0.01		-0.42	
1631	IP390	0.0038		-0.89	
1633		-----		-----	
1635	IP390	0.01		-0.42	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707	ISO10307	0.022		0.50	
1710		-----		-----	
1712		-----		-----	
1720		-----		-----	
1724	IP390	0.0135		-0.15	
1728		-----		-----	
1740	IP390	0.018		0.19	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP390	0.0009		-1.12	
1842	IP390	0.01		-0.42	
1849	ISO10307	0.0175		0.15	
1854	IP390	0.030		1.11	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948		-----		-----	
2129	IP390	0.02605		0.81	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	21	24
outliers	0	3
mean (n)	0.0155	0.0154
st.dev. (n)	0.00835	0.00552
R(calc.)	0.0234	0.0155
R(IP390:04)	0.0366	0.0365

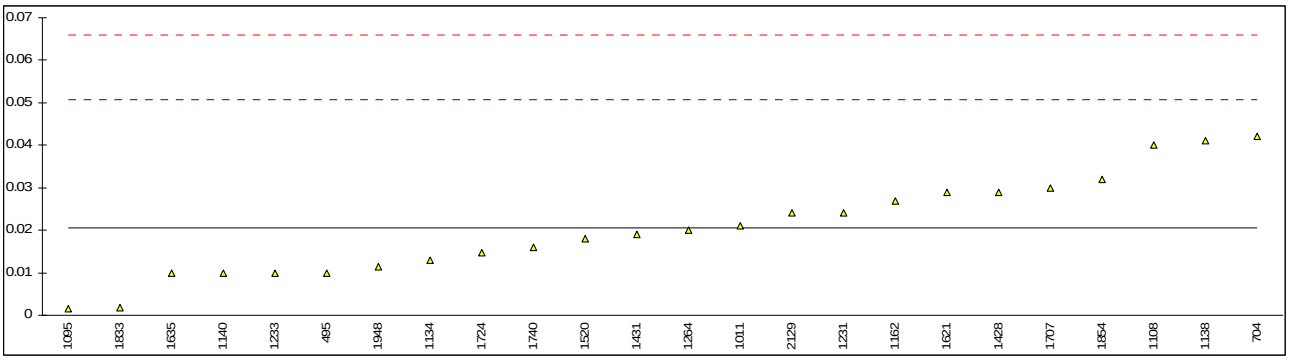


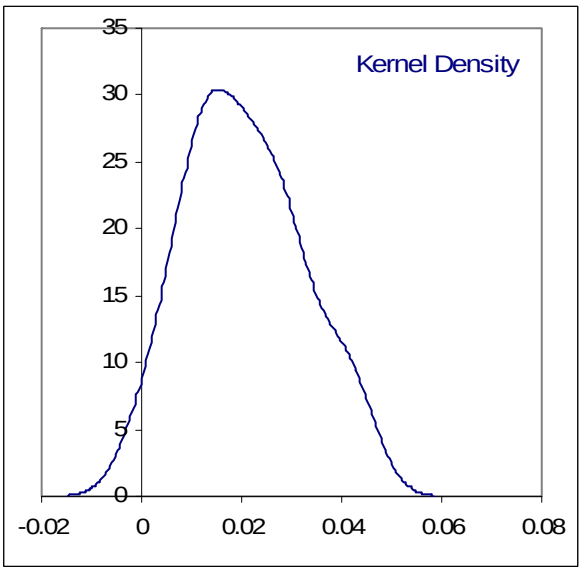


Determination of Total Sediment (Potential) of sample #1003; results in %M/M

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495	IP390	0.01		-0.70	
593		-----		-----	
622		-----		-----	
704	IP390	0.042		1.42	
705		-----		-----	
1011	IP390	0.021		0.03	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040		-----		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095	IP390	0.0016		-1.26	
1108	IP390	0.04		1.29	
1126		-----		-----	
1131		-----		-----	
1134	IP390	0.013		-0.50	
1138	IP390	0.041		1.35	
1140	IP390	0.01		-0.70	
1161		-----		-----	
1162	ISO10307	0.027		0.42	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	IP390	0.024		0.23	
1233	IP390	0.01		-0.70	
1259		-----		-----	
1264	IP390	0.02		-0.04	
1269		-----		-----	
1271		-----		-----	
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427		-----		-----	
1428	IP390	0.029		0.56	
1431	D4870	0.019		-0.11	
1510		-----		-----	
1520	IP390	0.018		-0.17	
1621	IP390	0.0289		0.55	
1631		-----		-----	
1633		-----		-----	
1635	IP390	0.01		-0.70	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707	ISO10307	0.030		0.62	
1710		-----		-----	
1712		-----		-----	
1720		-----		-----	
1724	IP390	0.0148		-0.39	
1728		-----		-----	
1740	IP390	0.016		-0.31	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP390	0.0018		-1.25	
1842		-----		-----	
1849		-----		-----	
1854	IP390	0.032		0.76	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939		-----		-----	
1942		-----		-----	
1948	ISO10307	0.0114	C	-0.61	First reported 0.11345
2129	IP390	0.024		0.23	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	24	33
outliers	0	0
mean (n)	0.0206	0.0188
st.dev. (n)	0.01150	0.00735
R(calc.)	0.0322	0.0206
R(IP390:04)	0.0422	0.0404

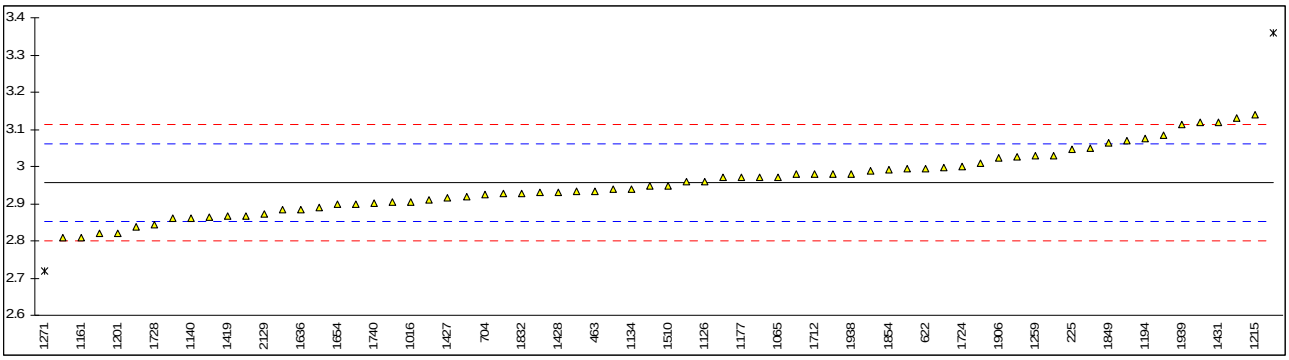


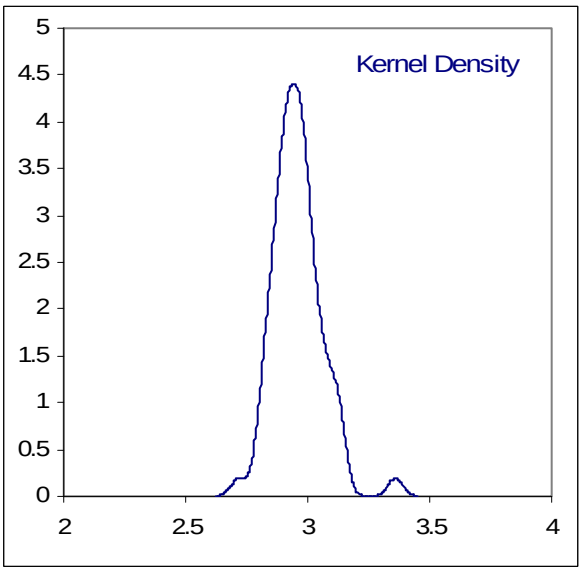


Determination of Total Sulphur on sample #1003; results in %M/M

lab	method	value	mark	z(targ)	remarks
225	D4294	3.045		1.70	
463	D4294	2.9335		-0.44	
495	D4294	3.05		1.79	
593		-----		-----	
622	D4294	2.994		0.72	
704	D4294	2.926		-0.58	
705	D4294	3.008		0.99	
1011	ISO8754	2.837		-2.29	
1013		-----		-----	
1016	D2622	2.904		-1.00	
1022	D4294	2.98		0.45	
1038	D4294	2.993		0.70	
1040	ISO8754	2.867		-1.71	
1059	ISO14596	2.82		-2.61	
1065	D4294	2.97		0.26	
1081	D2622	3.03	C	1.41	First reported 30.31
1095		-----		-----	
1108	D4294	3.36	G(0.01)	7.73	
1126	in house	2.96		0.07	
1131	ISO8754	2.97		0.26	
1134	IP336	2.94		-0.31	
1138	IP336	2.96		0.07	
1140	IP336	2.86		-1.85	
1161	ISO8754	2.81		-2.81	
1162	D4294	2.997		0.78	
1175		-----		-----	
1177	DIN51900	2.97		0.26	
1194	D4294	3.075		2.27	
1201	D4294	2.82		-2.61	
1205	ISO14596	2.947		-0.18	
1215	D4294	3.1401		3.52	
1231	D2622	3.084		2.44	
1233	ISO8754	2.91		-0.89	
1259	D4294	3.03		1.41	
1264	D4294	2.989		0.62	
1269	ISO14596	3.13		3.33	
1271	D4294	2.719	G(0.01)	-4.55	
1275	IP336	2.883		-1.41	
1419	ISO8754	2.866		-1.73	
1425	IN HOUSE	2.81		-2.81	
1427	D4294	2.9148		-0.80	
1428	ISO8754	2.93		-0.51	
1431	D4294	3.12		3.13	
1510	D4294	2.948		-0.16	
1520	D4294	2.938		-0.35	
1621	D4294	3.025		1.31	
1631	D4294	2.89		-1.27	
1633		-----		-----	
1635	D4294	2.899		-1.10	
1636	D4294	2.884		-1.39	
1650	D4294	2.86		-1.85	
1654	ISO8754	2.898		-1.12	
1707	ISO8754	3.12		3.13	
1710	ISO8754	2.93		-0.51	
1712	D4294	2.98		0.45	
1720	D4294	3.07		2.18	
1724	IP336	3.00		0.83	
1728	D4294	2.844		-2.15	
1740	ISO8754	2.90		-1.08	
1810	D4294	2.92		-0.70	
1811	D4294	2.927		-0.56	
1832	iso8754	2.928		-0.54	
1833	D4294	2.97		0.26	
1842		-----		-----	
1849	D4294	3.06279		2.04	
1854	D4294	2.99		0.64	
1906	D5623	3.023		1.28	
1936	ISO20846	2.98		0.45	
1937	ISO8754	2.932		-0.47	
1938	D4294	2.981		0.47	
1939	D129	3.1126		2.99	
1942		-----		-----	
1948	D4294	2.864	C	-1.77	First reported 1.864
2129	IP336	2.872		-1.62	
2160	D4294	2.903		-1.02	
7003		-----		-----	

		Compare with October 2009 #0977	Only ASTM D4294 data:
normality	OK	OK	OK
n	66	75	35
outliers	2	0	2
mean (n)	2.956	2.994	2.970
st.dev. (n)	0.0828	0.0908	0.0769
R(calc.)	0.232	0.254	0.215
R(D4294:08a)	0.146	0.150	0.147

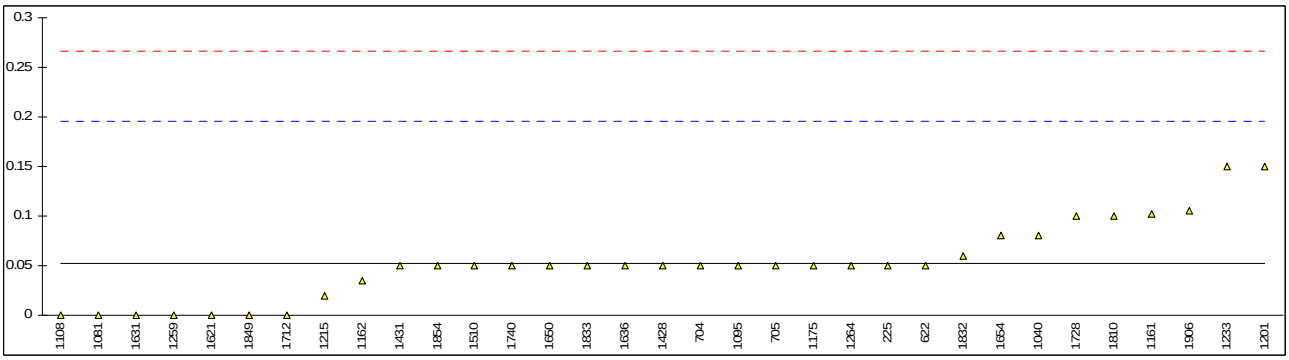


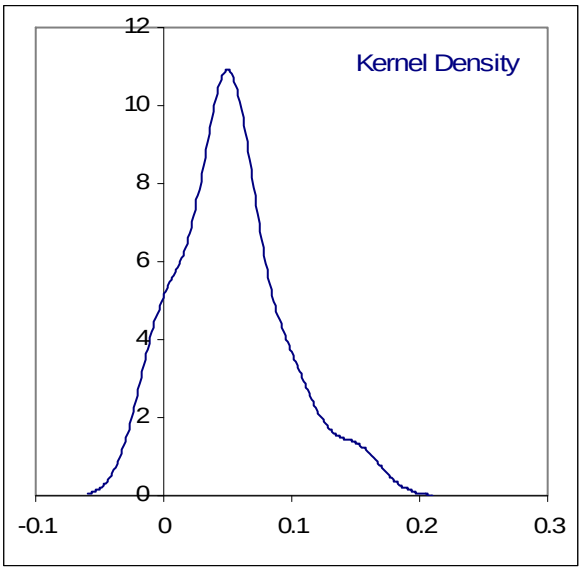


Determination of Water on sample #1003; results in %V/V

lab	method	value	mark	z(targ)	remarks
225	D95	0.05		-0.03	
463	D95	<0.05		-----	
495	D95	<0.05		-----	
593		-----		-----	
622	D95	0.05		-0.03	
704	D95	0.05		-0.03	
705	D95	0.05		-0.03	
1011	D95	<0.1		-----	
1013	D95	<0.05		-----	
1016		-----		-----	
1022	D95	<0.05		-----	
1038		-----		-----	
1040	DIN51777	0.08		0.39	
1059	ISO3733	<0.05		-----	
1065		-----		-----	
1081	D95	0		-0.73	
1095	D95	0.05		-0.03	
1108	D95	0		-0.73	
1126		-----		-----	
1131	ISO3733	<0.05		-----	
1134	IP74	<0.5		-----	
1138	IP74	<0.05		-----	
1140	D95	<0.05		-----	
1161	EN1428	0.102		0.69	
1162	D95	0.035		-0.24	
1175	D95	0.05		-0.03	
1177		-----		-----	
1194		-----		-----	
1201	D95	0.15		1.37	
1205		-----		-----	
1215	D95	0.02		-0.45	
1231	D95	<0.05		-----	
1233	ISO3733	0.15		1.37	
1259	D95	0		-0.73	
1264	D95	0.05		-0.03	
1269		-----		-----	
1271	ISO3733	<0.1		-----	
1275	IP74	<0.10		-----	
1419		-----		-----	
1425	IN HOUSE	<1		-----	
1427	D95	<0.05		-----	
1428	EN1428	0.05		-0.03	
1431	D95	0.05		-0.03	
1510	D95	0.05		-0.03	
1520	D95	<0.05		-----	
1621	D95	0		-0.73	
1631	D95	0		-0.73	
1633	D95	<0.1		-----	
1635	D95	<0.05		-----	
1636	D95	0.05		-0.03	
1650	D95	0.05		-0.03	
1654	D95	0.08		0.39	
1707	EN1428	<0.1		-----	
1710		-----		-----	
1712	ISO3733	0		-0.73	
1720		-----		-----	
1724	D95	<0.1		-----	
1728	D95	0.1		0.67	
1740	ISO3733	0.05		-0.03	
1810	D95	0.1		0.67	
1811		-----		-----	
1832	INH2477	0.06		0.11	
1833	D95	0.05		-0.03	
1842	D95	<0.1		-----	
1849	D95	0		-0.73	
1854	D95	0.05		-0.03	
1906	D4317	0.105		0.74	
1936	EN1428	<0.1		-----	
1937	D95	<0.1		-----	
1938	D95	<0.1		-----	
1939	D95	<0.05		-----	
1942		-----		-----	
1948	D95	<0.1		-----	
2129	D95	<0.05		-----	
2160	EN1428	<0.1		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	not OK	not OK
n	33	52
outliers	0	0
mean (n)	0.053	0.066
st.dev. (n)	0.0399	0.0389
R(calc.)	0.112	0.109
R(D95:05e1)	0.200	0.200



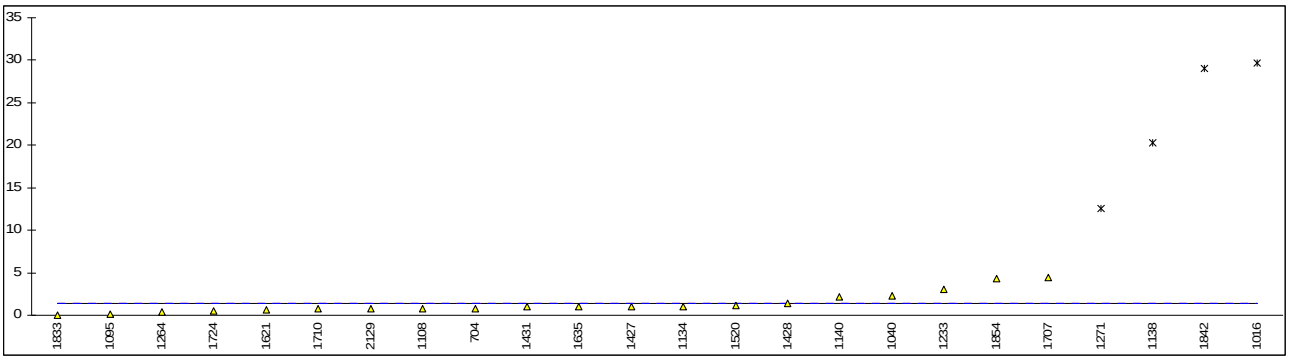


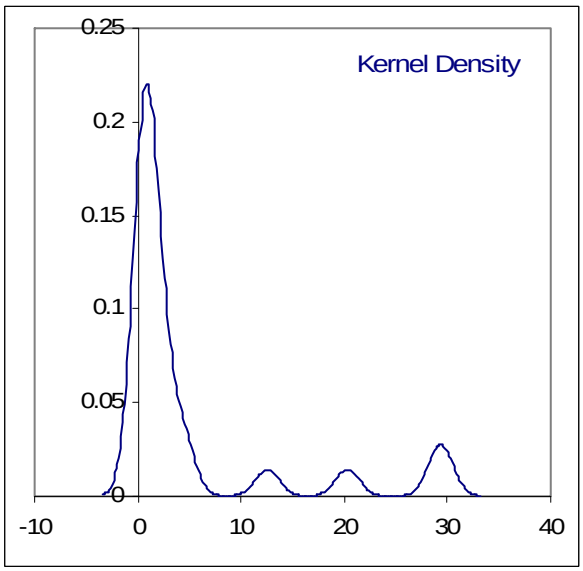
Determination of Aluminium on sample #1003; results in mg/kg

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
593		-----		-----	
622		-----		-----	
704	D5184	0.8		-----	
705		-----		-----	
1011	IP177	<2		-----	
1013		-----		-----	
1016	In house	29.7	G(0.05)	-----	False positive result?
1022		-----		-----	
1038		-----		-----	
1040	DIN51790	2.3		-----	
1059	In house	<6		-----	
1065		-----		-----	
1081		-----		-----	
1095	IP501	0.1		-----	
1108	D5184B	0.8		-----	
1126		-----		-----	
1131		-----		-----	
1134	IP501	1.06		-----	
1138	IP501	20.3	G(0.01)	-----	False positive result?
1140	IP377	2.1		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	D5184	NIL		-----	
1233	IP501	3		-----	
1259		-----		-----	
1264	IP501	0.33		-----	
1269		-----		-----	
1271	XRF	12.55	G(0.01)	-----	False positive result?
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427	D5184	1		-----	
1428	IP501	1.4		-----	
1431	ICP	1.0		-----	
1510		-----		-----	
1520	IP470	1.1		-----	
1621	D5184	0.659		-----	
1631		-----		-----	
1633		-----		-----	
1635	ISO10478	1		-----	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707	IP501	4.5		-----	
1710	UOP389	0.7		-----	
1712		-----		-----	
1720		-----		-----	
1724	IP501	0.49		-----	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP501	0.0126		-----	
1842	IP501	29	G(0.01)	-----	False positive result?
1849		-----		-----	
1854	D5184	4.3		-----	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	IP501	<1.0		-----	
1942		-----		-----	
1948		-----		-----	
2129	IP470	0.7		-----	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	not OK	not OK
n	20	29
outliers	4	4
mean (n)	1.37	1.29
st.dev. (n)	1.265	0.848
R(calc.)	3.54	2.37
R(D5184:06-B)	(0.97)	(0.97)

Application range = 7 – 137 mg/kg

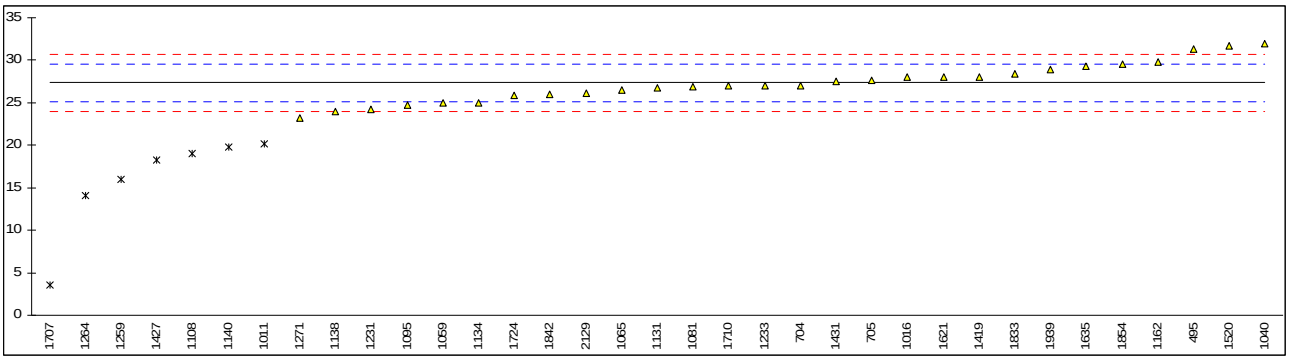


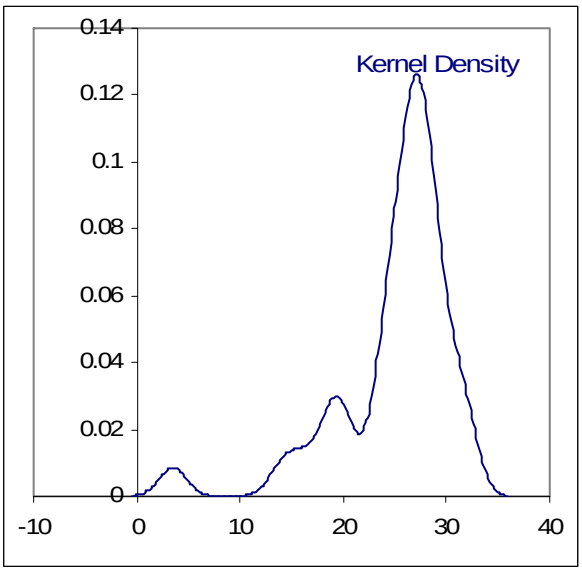


Determination of Nickel on sample #1003; results in mg/kg\

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495	DIN51790	31.3		3.50	
593		-----		-----	
622		-----		-----	
704	D5863	27.03		-0.27	
705	D5863	27.60		0.24	
1011	D5863	20.2	G(0.01)	-6.28	
1013		-----		-----	
1016	IN HOUSE	28.0		0.59	
1022		-----		-----	
1038		-----		-----	
1040	DIN51790	31.9		4.02	
1059	IN HOUSE	25		-2.06	
1065	XRF	26.5		-0.73	
1081	ICP	26.9		-0.38	
1095	IP501	24.7		-2.32	
1108	D5863	19.0	G(0.01)	-7.34	
1126		-----		-----	
1131	D5863	26.8		-0.47	
1134	IP501	25.02		-2.04	
1138	IP501	24.0		-2.94	
1140	D5863	19.8	G(0.01)	-6.64	
1161		-----		-----	
1162	D5863A	29.8	C	2.17	First reported 16.7
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	D5185	24.16		-2.80	
1233	IP501	27		-0.29	
1259	DIN51790	16	G(0.01)	-9.98	
1264	IP501	14.1	G(0.01)	-11.66	
1269		-----		-----	
1271	D5863	23.18		-3.66	
1275		-----		-----	
1419	IN HOUSE	28.06		0.64	
1425	IN HOUSE	<100		-----	
1427	D5863	18.25	G(0.01)	-8.00	
1428		-----		-----	
1431	ICP	27.5		0.15	
1510		-----		-----	
1520	IP470	31.7		3.85	
1621	IP501	28		0.59	
1631		-----		-----	
1633		-----		-----	
1635	D5708	29.3		1.73	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707	IP501	3.5	G(0.01)	-21.00	
1710	UOP389	27		-0.29	
1712		-----		-----	
1720		-----		-----	
1724	IP501	25.92		-1.24	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP501	28.37		0.91	
1842	IP501	26		-1.17	
1849		-----		-----	
1854	D5863	29.5		1.91	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	IP501	28.97	C	1.44	First reported 8.97
1942		-----		-----	
1948		-----		-----	
2129	IP470	26.1		-1.09	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977	
normality	OK	OK	
n	28	40	
outliers	7	0	
mean (n)	27.33	27.28	
st.dev. (n)	2.265	3.862	
R(calc.)	6.34	10.81	Compare R(D5863:05-A) = 7.51
R(D5863:05-B)	3.18	3.17	application range = 10 – 100 mg/kg

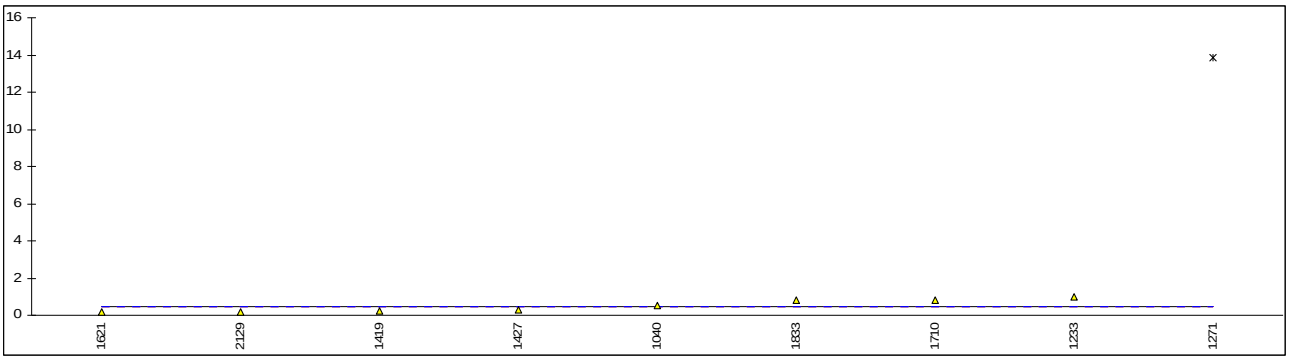


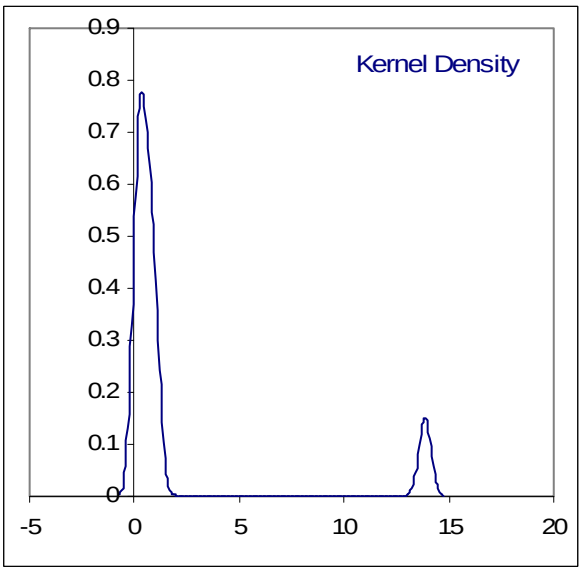


Determination of Potassium on sample #1003; results in mg/kg

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
593		-----		-----	
622		-----		-----	
704		-----		-----	
705		-----		-----	
1011		-----		-----	
1013		-----		-----	
1016		-----		-----	
1022		-----		-----	
1038		-----		-----	
1040	DIN51790	0.5		-----	
1059		-----		-----	
1065		-----		-----	
1081		-----		-----	
1095		-----		-----	
1108		-----		-----	
1126		-----		-----	
1131		-----		-----	
1134		-----		-----	
1138		-----		-----	
1140		-----		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	D5184	NIL		-----	
1233	IP501	1		-----	
1259		-----		-----	
1264		-----		-----	
1269		-----		-----	
1271	XRF	13.86	G(0.01)	-----	False positive result?
1275		-----		-----	
1419	IN HOUSE	0.23		-----	
1425	IN HOUSE	<2000		-----	
1427	IP288	0.263		-----	
1428		-----		-----	
1431		-----		-----	
1510		-----		-----	
1520	AAS	<1.0		-----	
1621	IP501	0.152		-----	
1631		-----		-----	
1633		-----		-----	
1635		-----		-----	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707		-----		-----	
1710	ICP	0.8		-----	
1712		-----		-----	
1720		-----		-----	
1724		-----		-----	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP501	0.784		-----	
1842	IP501	<0.1		-----	
1849		-----		-----	
1854		-----		-----	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	IP501	<1.0		-----	
1942		-----		-----	
1948		-----		-----	
2129	IP470	0.2		-----	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	8	6
outliers	1	1
mean (n)	0.49	0.44
st.dev. (n)	0.330	0.349
R(calc.)	0.92	0.98
R(Horwitz)	(0.80)	(0.78)



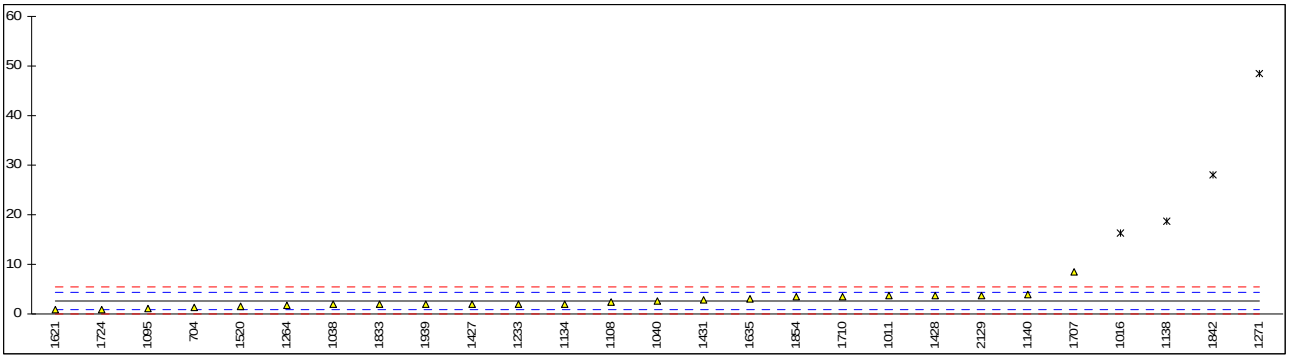


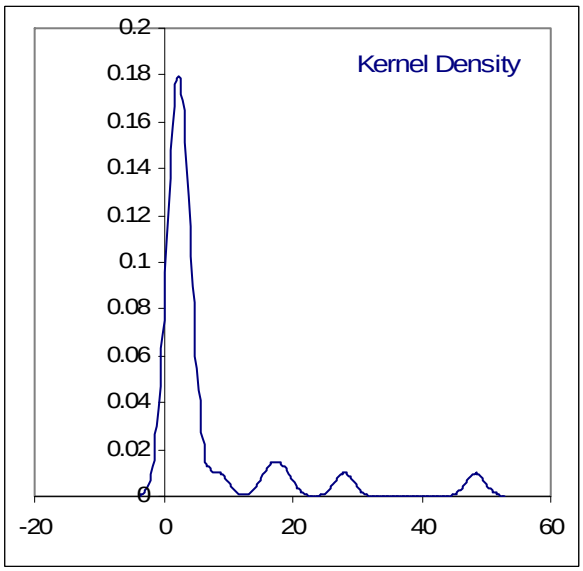
Determination of Silicon on sample #1003; results in mg/kg

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
593		-----		-----	
622		-----		-----	
704	D5863	1.3		-----	
705		-----		-----	
1011	IP177	3.7		-----	
1013		-----		-----	
1016	In house	16.3	G(0.01)	-----	False positive result?
1022		-----		-----	
1038	IP377	1.89		-----	
1040	DIN51790	2.6		-----	
1059	In house	<6		-----	
1065		-----		-----	
1081		-----		-----	
1095	IP501	1.1		-----	
1108	D5184B	2.4		-----	
1126		-----		-----	
1131		-----		-----	
1134	IP501	2.03		-----	
1138	IP501	18.6	G(0.01)	-----	False positive result?
1140	IP377	3.9		-----	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	D5184	NIL		-----	
1233	IP501	2		-----	
1259		-----		-----	
1264	IP501	1.7		-----	
1269		-----		-----	
1271	XRF	48.39	G(0.01)	-----	False positive result?
1275		-----		-----	
1419		-----		-----	
1425		-----		-----	
1427	D5184	2		-----	
1428	IP501	3.8		-----	
1431	ICP	2.8		-----	
1510		-----		-----	
1520	IP470	1.6		-----	
1621	D5184	0.796		-----	
1631		-----		-----	
1633		-----		-----	
1635	ISO10478	3		-----	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707	IP501	8.5		-----	
1710	UOP787	3.4		-----	
1712		-----		-----	
1720		-----		-----	
1724	IP501	0.81		-----	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP501	1.89		-----	
1842	IP501	28	G(0.01)	-----	False positive result?
1849		-----		-----	
1854	D5184A	3.4		-----	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	IP501	1.99		-----	
1942		-----		-----	
1948		-----		-----	
2129	IP470	3.8		-----	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	OK
n	23	28
outliers	4	4
mean (n)	2.63	3.35
st.dev. (n)	1.606	2.037
R(calc.)	4.50	5.70
R(D5184:06-B)	(2.55)	(3.00)

application range = 10 – 236 mg/kg



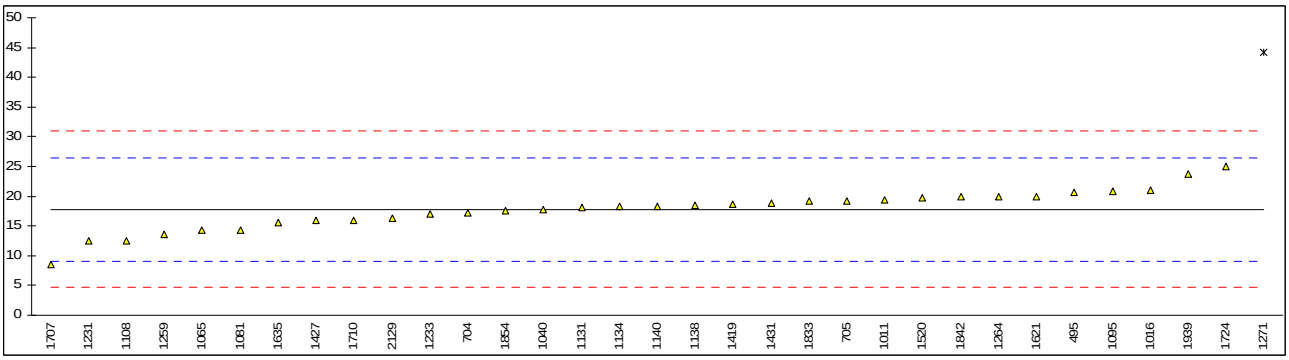


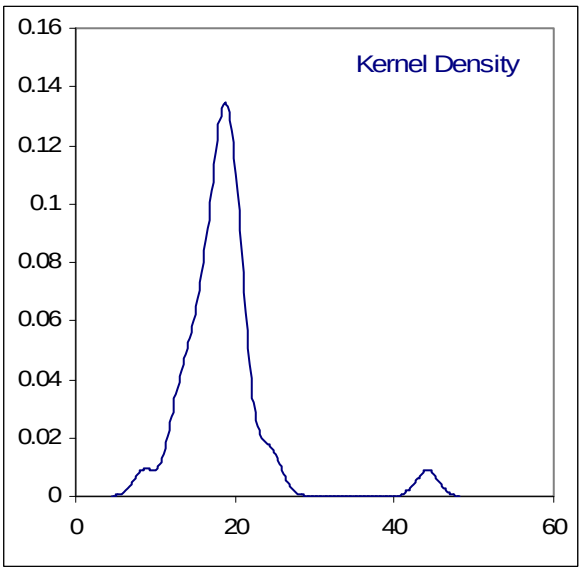
Determination of Sodium on sample #1003; results in mg/kg

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495	DIN51797	20.6		0.65	
593		-----		-----	
622		-----		-----	
704	D5863	17.29		-0.11	
705	D5863	19.25		0.34	
1011	D5863	19.3	C	0.35	First reported 4.7
1013		-----		-----	
1016	NEN6966	21.07		0.76	
1022		-----		-----	
1038		-----		-----	
1040	DIN51790	17.7		-0.01	
1059		-----		-----	
1065	IN HOUSE	14.3		-0.79	
1081	ICP	14.3		-0.79	
1095	IP501	20.9		0.72	
1108	D5863	12.5		-1.20	
1126		-----		-----	
1131	D5863	18.1		0.08	
1134	IP501	18.28		0.12	
1138	IP501	18.5		0.17	
1140	D5863	18.3		0.12	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	D5185	12.46		-1.21	
1233	IP501	17		-0.17	
1259	EN237	13.64		-0.94	
1264	IP501	20		0.51	
1269		-----		-----	
1271	D5863	44.16	G(0.01)	6.03	
1275		-----		-----	
1419	IN HOUSE	18.73		0.22	
1425	IN HOUSE	<150		-----	
1427	D5863	15.9		-0.43	
1428		-----		-----	
1431	ICP	18.8		0.24	
1510		-----		-----	
1520	IP470	19.8		0.47	
1621	IP501	20		0.51	
1631		-----		-----	
1633		-----		-----	
1635	D5185	15.5		-0.52	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707	IP501	8.6		-2.09	
1710	UOP389	16		-0.40	
1712		-----		-----	
1720		-----		-----	
1724	IP501	24.94		1.64	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP501	19.12		0.31	
1842	IP501	20		0.51	
1849		-----		-----	
1854	D5863	17.5		-0.06	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	IP501	23.65		1.35	
1942		-----		-----	
1948		-----		-----	
2129	IP470	16.3		-0.33	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977
normality	OK	not OK
n	32	47
outliers	1	0
mean (n)	17.76	17.23
st.dev. (n)	3.308	3.473
R(calc.)	9.26	9.72
R(D5863:05-B)	12.25	11.89

Application range = 1 – 20 mg/kg

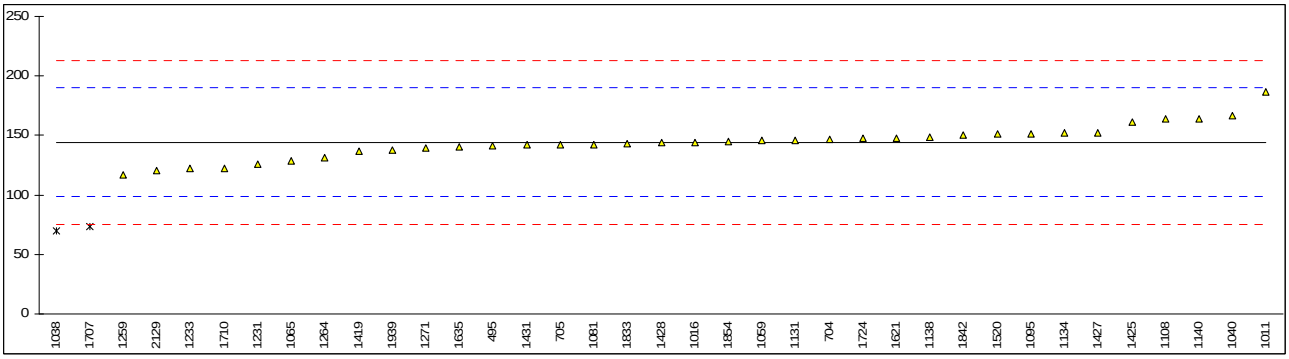


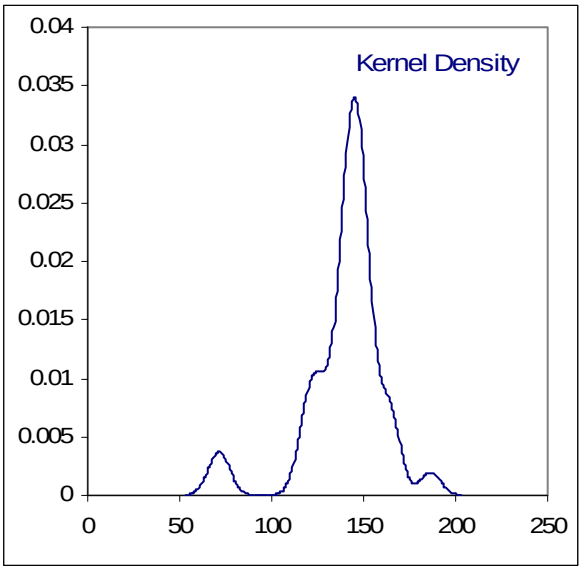


Determination of Vanadium on sample #1003; results in mg/kg

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495	DIN51790	141.2		-0.13	
593		-----		-----	
622		-----		-----	
704	D5863	146.99		0.12	
705	D5863	142.27		-0.09	
1011	D5863	186.5		1.85	
1013		-----		-----	
1016	In house	144.3		0.00	
1022		-----		-----	
1038	INH111	69.7	G(0.05)	-3.26	
1040	DIN51790	167		1.00	
1059	In house	146		0.08	
1065	XRF	129		-0.67	
1081	ICP	142.4		-0.08	
1095	IP501	151.6		0.32	
1108	D5863	163.5		0.84	
1126		-----		-----	
1131	D5863	146.2		0.09	
1134	IP501	151.89		0.34	
1138	IP501	148.8		0.20	
1140	D5863	163.6		0.85	
1161		-----		-----	
1162		-----		-----	
1175		-----		-----	
1177		-----		-----	
1194		-----		-----	
1201		-----		-----	
1205		-----		-----	
1215		-----		-----	
1231	D5185	126.2		-0.79	
1233	IP501	122		-0.97	
1259	DIN51790	117		-1.19	
1264	IP501	131.1		-0.57	
1269		-----		-----	
1271	D5863	139.14		-0.22	
1275		-----		-----	
1419	IN HOUSE	136.41		-0.34	
1425	IN HOUSE	161.6		0.76	
1427	D5863	152		0.34	
1428	IP501	144		-0.01	
1431	ICP	142.0		-0.10	
1510		-----		-----	
1520	IP470	151.3		0.31	
1621	IP501	148		0.17	
1631		-----		-----	
1633		-----		-----	
1635	D5708	140		-0.18	
1636		-----		-----	
1650		-----		-----	
1654		-----		-----	
1707	IP501	73.5	G(0.01)	-3.09	
1710	UOP389	122		-0.97	
1712		-----		-----	
1720		-----		-----	
1724	IP501	147.3		0.13	
1728		-----		-----	
1740		-----		-----	
1810		-----		-----	
1811		-----		-----	
1832		-----		-----	
1833	IP501	143.15		-0.05	
1842	IP501	150		0.25	
1849		-----		-----	
1854	D5863	144.8		0.03	
1906		-----		-----	
1936		-----		-----	
1937		-----		-----	
1938		-----		-----	
1939	IP501	137.92		-0.28	
1942		-----		-----	
1948		-----		-----	
2129	IP470	120.6		-1.03	
2160		-----		-----	
7003		-----		-----	

		Compare with October 2009 #0977	
normality	OK	not OK	
n	35	48	
outliers	2	3	
mean (n)	144.22	143.93	
st.dev. (n)	14.199	14.251	
R(calc.)	39.76	39.90	Compare R(D5863:05-A) = 28.95
R(D5863:05-B)	64.03	63.93	application range = 50 – 500 mg/kg

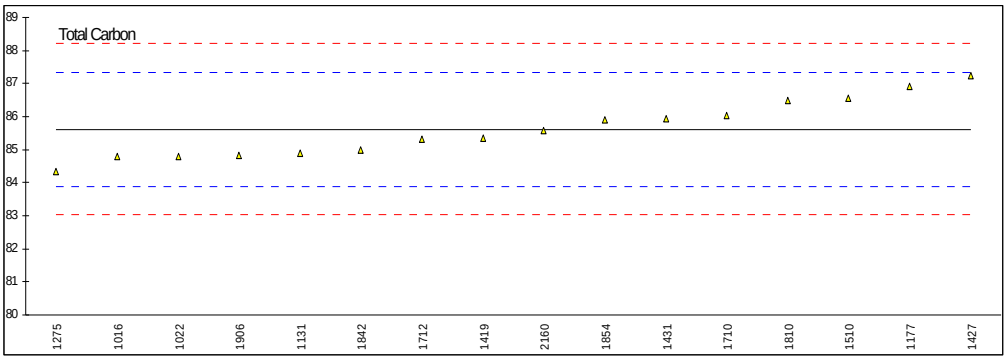


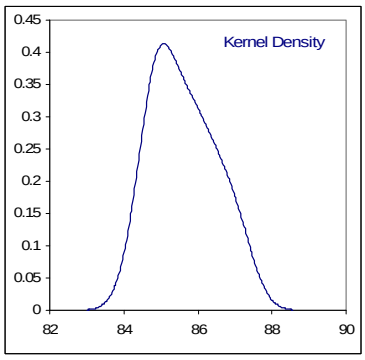


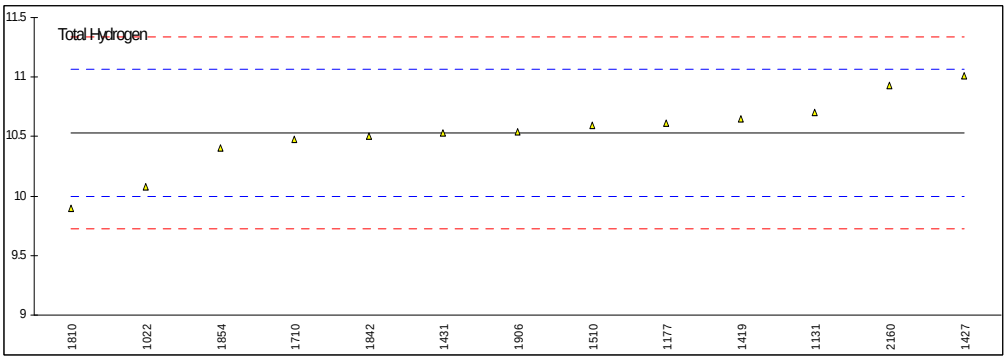
Determination of Total Carbon, Hydrogen and Nitrogen on sample #1003; results in %M/M

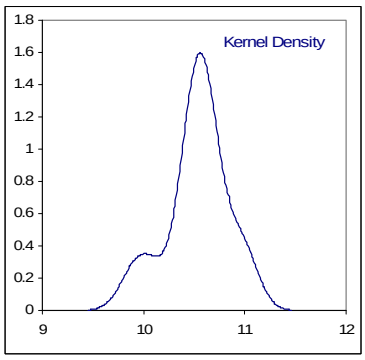
lab	method	Tot.Carbon	mark	z(targ)	Tot.Hydrogen	mark	z(targ)	Tot.Nitrogen	mark	z(targ)	remarks
225		-----		-----	-----		-----	-----		-----	
463		-----		-----	-----		-----	-----		-----	
495		-----		-----	-----		-----	-----		-----	
593		-----		-----	-----		-----	-----		-----	
622		-----		-----	-----		-----	-----		-----	
704		-----		-----	-----		-----	-----		-----	
705		-----		-----	-----		-----	-----		-----	
1011		-----		-----	-----		-----	-----		-----	
1013		-----		-----	-----		-----	-----		-----	
1016	D5291	84.79		-0.96	-----		-----	0.649		0.20	
1022	D5291	84.80		-0.95	10.08		-1.69	0.63		0.08	
1038		-----		-----	-----		-----	-----		-----	
1040		-----		-----	-----		-----	0.394		-1.40	
1059		-----		-----	-----		-----	-----		-----	
1065		-----		-----	-----		-----	-----		-----	
1081		-----		-----	-----		-----	-----		-----	
1095		-----		-----	-----		-----	-----		-----	
1108		-----		-----	-----		-----	-----		-----	
1126		-----		-----	-----		-----	-----		-----	
1131	D5291	84.9		-0.83	10.7		0.63	0.66		0.27	
1134		-----		-----	-----		-----	-----		-----	
1138		-----		-----	-----		-----	-----		-----	
1140		-----		-----	-----		-----	-----		-----	
1161		-----		-----	-----		-----	-----		-----	
1162		-----		-----	-----		-----	-----		-----	
1175		-----		-----	-----		-----	-----		-----	
1177	D5291	86.91		1.50	10.61		0.29	0.70		0.52	
1194		-----		-----	-----		-----	-----		-----	
1201		-----		-----	-----		-----	-----		-----	
1205		-----		-----	-----		-----	-----		-----	
1215		-----		-----	-----		-----	-----		-----	
1231		-----		-----	-----		-----	-----		-----	
1233		-----		-----	-----		-----	-----		-----	
1259		-----		-----	-----		-----	-----		-----	
1264		-----		-----	-----		-----	-----		-----	
1269		-----		-----	-----		-----	-----		-----	
1271		-----		-----	-----		-----	-----		-----	
1275	IN HOUSE	84.33		-1.49	-----		-----	-----		-----	
1419	D5291	85.36		-0.30	10.65		0.44	0.56		-0.36	
1425		-----		-----	-----		-----	-----		-----	
1427	D5291	87.2376		1.88	11.0070		1.77	0.68727		0.44	
1428		-----		-----	-----		-----	-----		-----	
1431	D5291	85.94		0.37	10.53		-0.01	0.72		0.65	
1510	D5291	86.55		1.08	10.59		0.22	0.61		-0.04	
1520		-----		-----	-----		-----	-----		-----	
1621		-----		-----	-----		-----	-----		-----	
1631		-----		-----	-----		-----	-----		-----	
1633		-----		-----	-----		-----	-----		-----	
1635		-----		-----	-----		-----	-----		-----	
1636		-----		-----	-----		-----	-----		-----	
1650		-----		-----	-----		-----	-----		-----	
1654		-----		-----	-----		-----	-----		-----	
1707		-----		-----	-----		-----	-----		-----	
1710	D5291	86.02		0.47	10.48		-0.19	-----		-----	
1712	D5291	85.3		-0.37	-----		-----	-----		-----	
1720		-----		-----	-----		-----	-----		-----	
1724		-----		-----	-----		-----	-----		-----	
1728		-----		-----	-----		-----	-----		-----	
1740		-----		-----	-----		-----	-----		-----	
1810	D5291	86.48		1.00	9.90		-2.36	-----		-----	
1811		-----		-----	-----		-----	-----		-----	
1832		-----		-----	-----		-----	-----		-----	
1833		-----		-----	-----		-----	-----		-----	
1842	IN HOUSE	85.0		-0.72	10.5		-0.12	0.6		-0.11	
1849		-----		-----	-----		-----	-----		-----	
1854	D5291	85.89		0.31	10.40		-0.49	0.72		0.65	
1906	D5291	84.83		-0.91	10.54		0.03	0.47		-0.92	
1936		-----		-----	-----		-----	-----		-----	
1937		-----		-----	-----		-----	-----		-----	
1938		-----		-----	-----		-----	-----		-----	
1939		-----		-----	-----		-----	-----		-----	
1942		-----		-----	-----		-----	-----		-----	
1948		-----		-----	-----		-----	-----		-----	
2129		-----		-----	-----		-----	-----		-----	
2160	TS12902	85.56		-0.07	10.93		1.48	0.617		0.00	
7003		-----		-----	-----		-----	-----		-----	

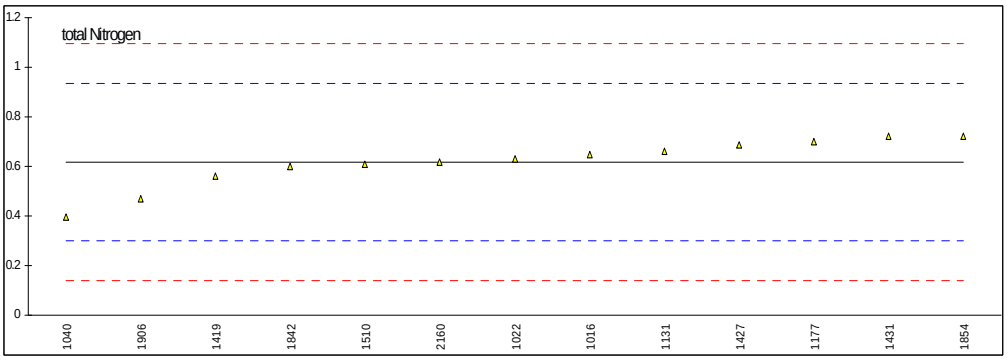
normality	OK	OK	OK
n	16	13	13
outliers	0	0	0
mean (n)	85.62	10.53	0.617
st.dev. (n)	0.854	0.297	0.0962
R(calc.)	2.39	0.83	0.269
R(D5291:07)	2.41	0.75	0.446

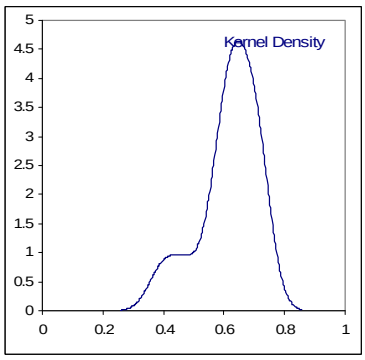












Distillation according to ASTM D1160 on sample #1003, results in °C

lab	method	IBP	5%	10%	20%	30%	40%	50%	FBP
225		-----	-----	-----	-----	-----	-----	-----	-----
463		-----	-----	-----	-----	-----	-----	-----	-----
495	D1160	248.4	280.0	294.4	321.8	351.2	396.2	494.5	505.5
593		-----	-----	-----	-----	-----	-----	-----	-----
622		-----	-----	-----	-----	-----	-----	-----	-----
704	D1160	236	272	287	**314**	**341**	**375**	489	514
705		-----	-----	-----	-----	-----	-----	-----	-----
1011	D1160	246	278	293	321	353	401	504	512
1013		-----	-----	-----	-----	-----	-----	-----	-----
1016		-----	-----	-----	-----	-----	-----	-----	-----
1022		-----	-----	-----	-----	-----	-----	-----	-----
1038		-----	-----	-----	-----	-----	-----	-----	-----
1040		-----	-----	-----	-----	-----	-----	-----	-----
1059		-----	-----	-----	-----	-----	-----	-----	-----
1065		-----	268.5	295.5	326.5	356	384	483.5	**732**
1081		-----	-----	-----	-----	-----	-----	-----	-----
1095	D1160	240	277	292	322	349	393	501	512
1108	D1160	214.5	282.9	295.1	319.5	349.3	393.2	495.8	499.9
1126		-----	-----	-----	-----	-----	-----	-----	-----
1131		-----	-----	-----	-----	-----	-----	-----	-----
1134		-----	-----	-----	-----	-----	-----	-----	-----
1138		-----	-----	-----	-----	-----	-----	-----	-----
1140		-----	-----	-----	-----	-----	-----	-----	-----
1161		-----	-----	-----	-----	-----	-----	-----	-----
1162		-----	-----	-----	-----	-----	-----	-----	-----
1175		-----	-----	-----	-----	-----	-----	-----	-----
1177		-----	-----	-----	-----	-----	-----	-----	-----
1194		-----	-----	-----	-----	-----	-----	-----	-----
1201		-----	-----	-----	-----	-----	-----	-----	-----
1205		-----	-----	-----	-----	-----	-----	-----	-----
1215		-----	-----	-----	-----	-----	-----	-----	-----
1231		-----	-----	-----	-----	-----	-----	-----	-----
1233		-----	-----	-----	-----	-----	-----	-----	-----
1259	D1160	235.5	277.0	292.7	320.9	349.2	388.9	488.8	503.9
1264		-----	-----	-----	-----	-----	-----	-----	-----
1269		-----	-----	-----	-----	-----	-----	-----	-----
1271		-----	-----	-----	-----	-----	-----	-----	-----
1275		-----	-----	-----	-----	-----	-----	-----	-----
1419		-----	-----	-----	-----	-----	-----	-----	-----
1425		-----	-----	-----	-----	-----	-----	-----	-----
1427		-----	-----	-----	-----	-----	-----	-----	-----
1428		-----	-----	-----	-----	-----	-----	-----	-----
1431		-----	-----	-----	-----	-----	-----	-----	-----
1510		-----	-----	-----	-----	-----	-----	-----	-----
1520		-----	-----	-----	-----	-----	-----	-----	-----
1621		-----	-----	-----	-----	-----	-----	-----	-----
1631		-----	-----	-----	-----	-----	-----	-----	-----
1633		-----	-----	-----	-----	-----	-----	-----	-----
1635		-----	-----	-----	-----	-----	-----	-----	-----
1636		-----	-----	-----	-----	-----	-----	-----	-----
1650		-----	-----	-----	-----	-----	-----	-----	-----
1654		-----	-----	-----	-----	-----	-----	-----	-----
1707		-----	-----	-----	-----	-----	-----	-----	-----
1710	D1160	242.5	283.9	296.6	325.1	353.0	395.3	484.2	494.4
1712	D1160	255	285	298	323	353	-----	-----	506
1720		-----	-----	-----	-----	-----	-----	-----	-----
1724	D1160	232.5	276.0	291.5	319.1	347.7	393.7	497.0	512.5
1728		-----	-----	-----	-----	-----	-----	-----	-----
1740		-----	-----	-----	-----	-----	-----	-----	-----
1810		-----	-----	-----	-----	-----	-----	-----	-----
1811		-----	-----	-----	-----	-----	-----	-----	-----
1832		-----	-----	-----	-----	-----	-----	-----	-----
1833		-----	-----	-----	-----	-----	-----	-----	-----
1842	D1160	247.3	277.7	296.5	324.4	352.8	397.6	515.0	**564.3**
1849		-----	-----	-----	-----	-----	-----	-----	-----
1854	D1160	225.0	281.5	299.0	324.0	348.5	390.0	496.5	505.0
1906		-----	-----	-----	-----	-----	-----	-----	-----
1936		-----	-----	-----	-----	-----	-----	-----	-----
1937		-----	-----	-----	-----	-----	-----	-----	-----
1938		-----	-----	-----	-----	-----	-----	-----	-----
1939		-----	-----	-----	-----	-----	-----	-----	-----
1942		-----	-----	-----	-----	-----	-----	-----	-----
1948		-----	-----	-----	-----	-----	-----	-----	-----
2129	D1160	245	286	301	329	356	398	491	504
2160		-----	-----	-----	-----	-----	-----	-----	-----
7003		-----	-----	-----	-----	-----	-----	-----	-----

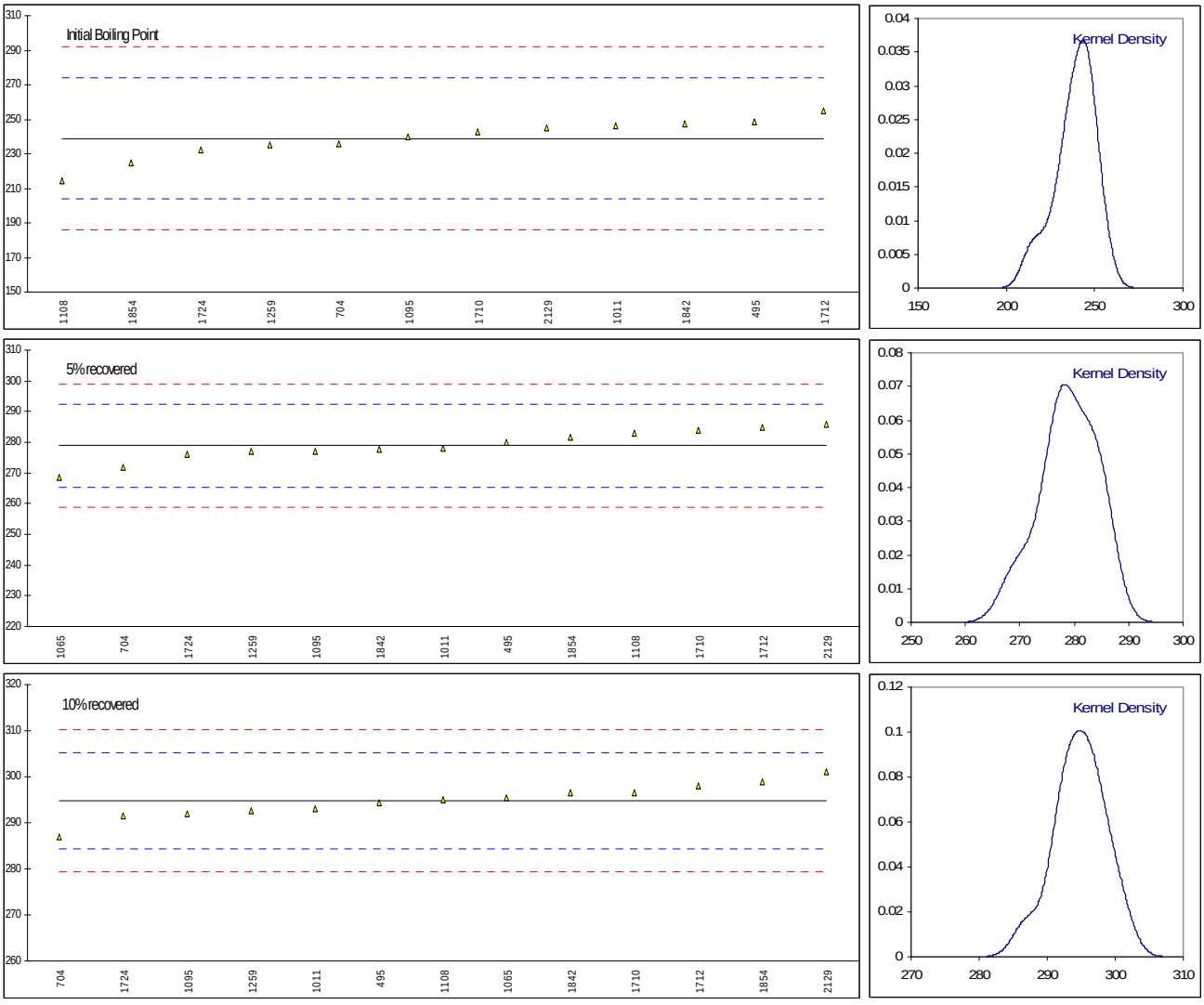
normality	OK	OK	OK	OK	OK	OK	OK	OK
n	12	13	13	12	12	11	11	11
outliers	0	0	0	1	1	1	1	2
mean (n)	238.97	278.88	294.79	323.02	351.56	393.72	493.21	506.29
st.dev. (n)	11.165	5.085	3.656	2.922	2.841	4.768	6.544	5.990
R(calc.)	31.26	14.24	10.24	8.18	7.96	13.35	18.32	16.77
R(D1160:06)	49.45	18.80	14.47	14.26	15.60	20.73	18.10	26.89

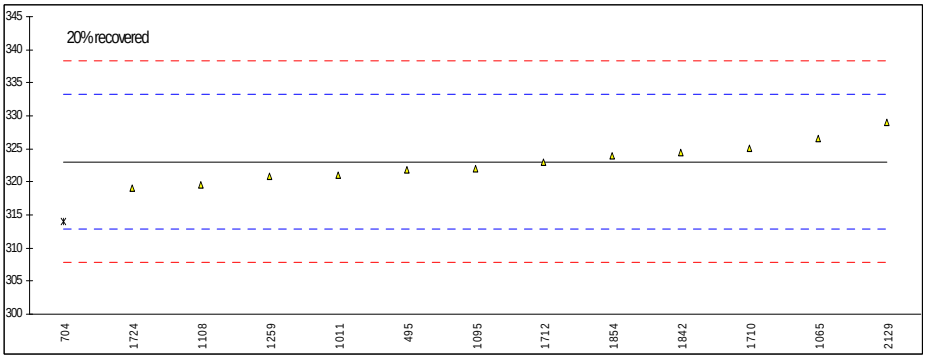
Bold and underlined results are marked as outliers according to Grubb's outliers test

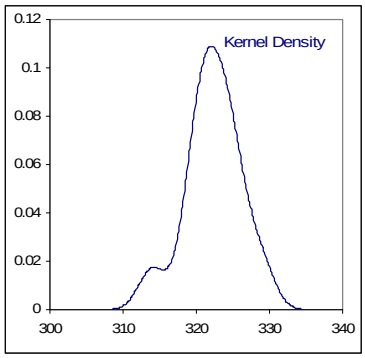
R (D1160)	IBP:	49.45 = 2.9x[e exp{3.424}]/1.8	and C/%V = 7.98
(Table 2)	5%:	18.80 = 3.2x[e exp{1.415+0.409xln(1.8xC/%V)}]/1.8	and C/%V = 5.58
	10%:	14.47 = 3.2x[e exp{1.415+0.409xln(1.8xC/%V)}]/1.8	and C/%V = 2.94
	20%:	14.26 = 3.2x[e exp{1.415+0.409xln(1.8xC/%V)}]/1.8	and C/%V = 2.84
	30%:	15.60 = 3.2x[e exp{1.415+0.409xln(1.8xC/%V)}]/1.8	and C/%V = 3.53
	40%:	20.73 = 3.2x[e exp{1.415+0.409xln(1.8xC/%V)}]/1.8	and C/%V = 7.08
	50%:	18.10 = 3.2x[e exp{1.415+0.409xln(1.8xC/%V)}]/1.8	and C/%V = 5.08
	FBP:	26.89 = 2.9x[e exp{2.815}]/1.8	and C/%V = 0.26

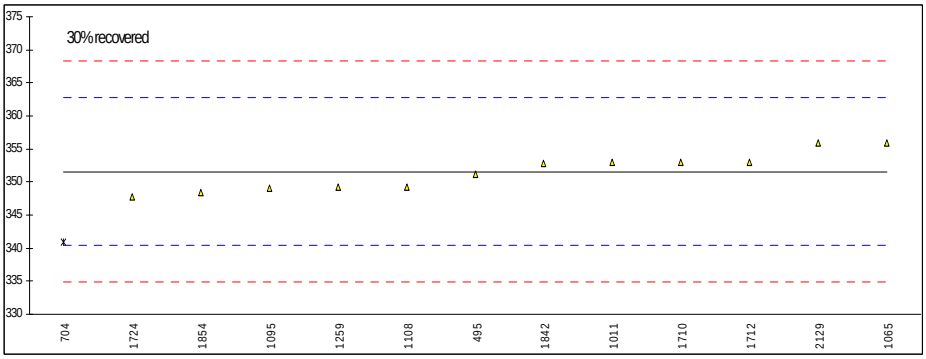
Compare with October 2009 #0977

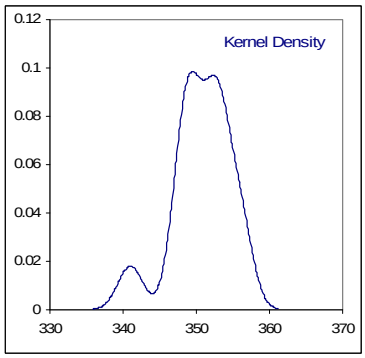
normality	not OK	OK	OK	OK	OK	OK	OK	OK
n	10	8	9	9	9	10	10	9
outliers	0	2	1	1	1	0	0	0
mean (n)	241.83	281.67	294.41	321.77	348.88	393.18	494.19	509.02
st.dev. (n)	11.689	1.622	5.176	4.659	4.261	9.464	13.907	14.425
R(calc.)	32.73	4.54	14.49	13.04	11.93	26.50	38.94	40.39
R(D1160:06)	49.45	18.35	13.91	14.02	15.66	20.94	18.23	26.89

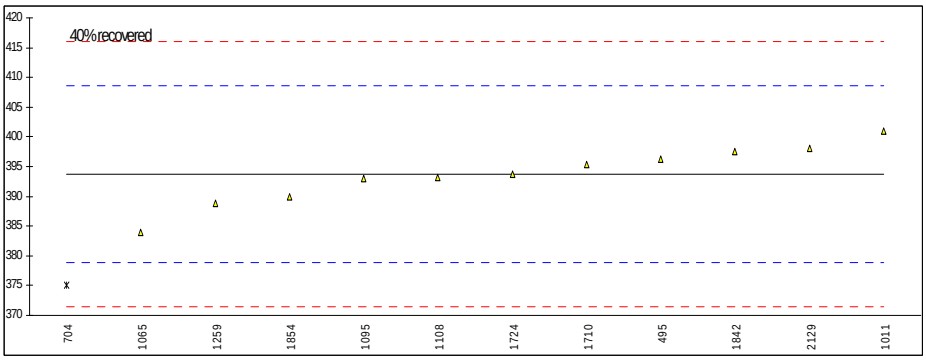


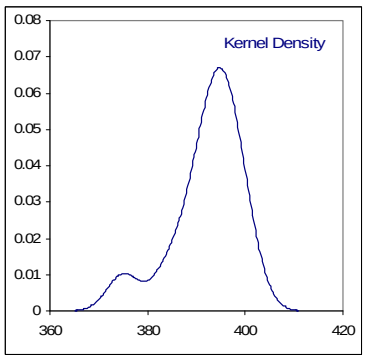

20%recovered
345
340
335
330
325
320
315
310
305
300
704 1724 1108 1259 1011 495 1095 1712 1854 1842 1710 1065 2129

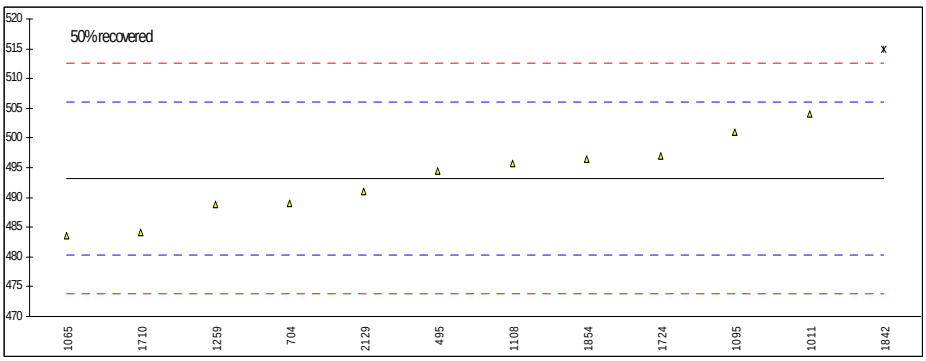

Kernel Density
0.12
0.1
0.08
0.06
0.04
0.02
0
300 310 320 330 340

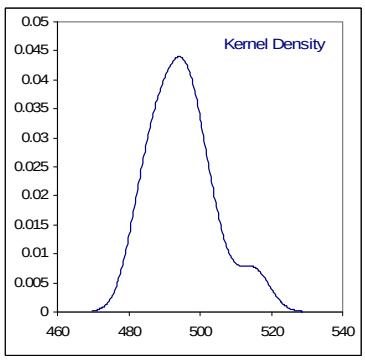

30%recovered
375
370
365
360
355
350
345
340
335
330
704 1724 1854 1095 1259 1108 495 1842 1011 1710 1712 2129 1065

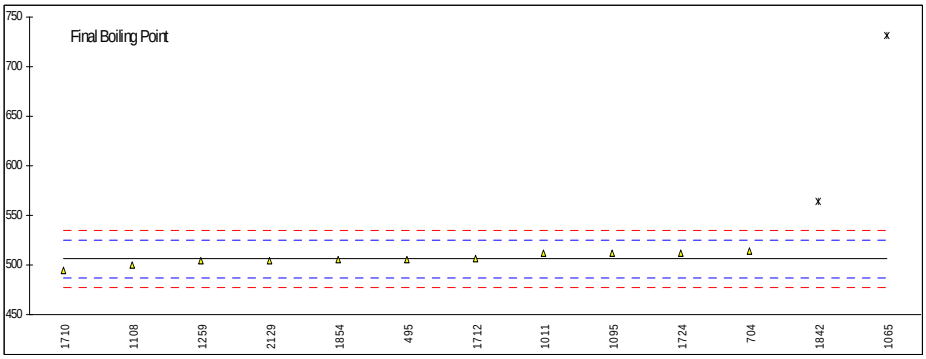

Kernel Density
0.12
0.1
0.08
0.06
0.04
0.02
0
330 340 350 360 370

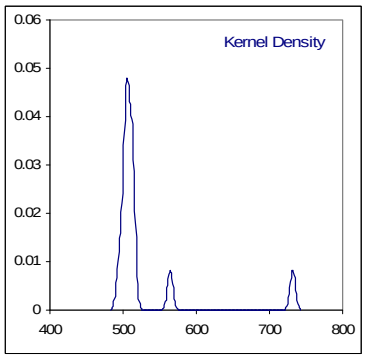

40%recovered
420
415
410
405
400
395
390
385
380
375
370
704 1065 1259 1854 1095 1108 1724 1710 495 1842 2129 1011


Kernel Density
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
360 380 400 420


50%recovered
520
515
510
505
500
495
490
485
480
475
470
1065 1710 1259 704 2129 495 1108 1854 1724 1095 1011 1842


Kernel Density
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
460 480 500 520 540


Final Boiling Point
750
700
650
600
550
500
450
1710 1108 1259 2129 1854 495 1712 1011 1095 1724 704 1842 1065


Kernel Density
0.06
0.05
0.04
0.03
0.02
0.01
0
400 500 600 700 800

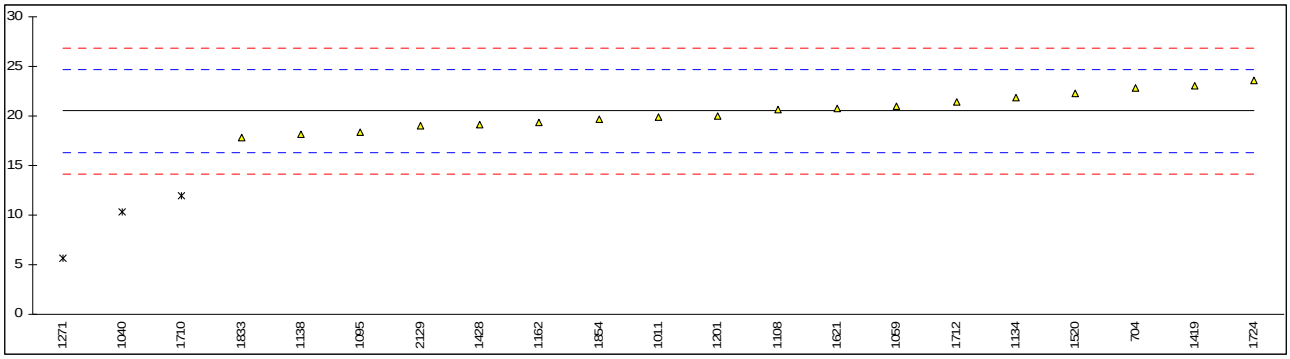
Distillation according to ASTM D1160 on sample #1003: z-scores

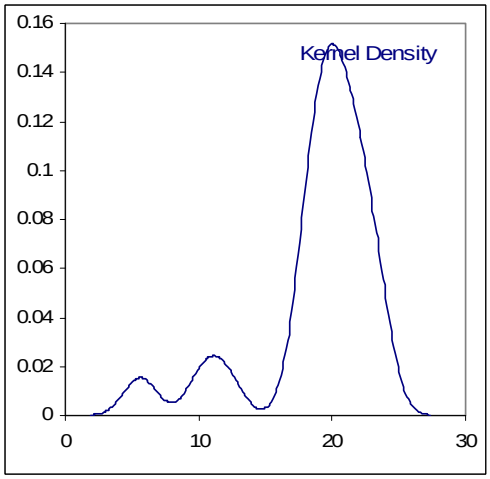
lab	IBP	5%	10%	20%	30%	40%	50%	FBP	remarks
225	-----	-----	-----	-----	-----	-----	-----	-----	
463	-----	-----	-----	-----	-----	-----	-----	-----	
495	0.53	0.17	-0.08	-0.24	-0.06	0.34	0.20	-0.08	
593	-----	-----	-----	-----	-----	-----	-----	-----	
622	-----	-----	-----	-----	-----	-----	-----	-----	
704	-0.17	-1.03	-1.51	-1.77	-1.90	-2.53	-0.65	0.80	
705	-----	-----	-----	-----	-----	-----	-----	-----	
1011	0.40	-0.13	-0.35	-0.40	0.26	0.98	1.67	0.59	
1013	-----	-----	-----	-----	-----	-----	-----	-----	
1016	-----	-----	-----	-----	-----	-----	-----	-----	
1022	-----	-----	-----	-----	-----	-----	-----	-----	
1038	-----	-----	-----	-----	-----	-----	-----	-----	
1040	-----	-----	-----	-----	-----	-----	-----	-----	
1059	-----	-----	-----	-----	-----	-----	-----	-----	
1065	-----	-1.55	0.14	0.68	0.80	-1.31	-1.50	23.50	
1081	-----	-----	-----	-----	-----	-----	-----	-----	
1095	0.06	-0.28	-0.54	-0.20	-0.46	-0.10	1.21	0.59	
1108	-1.39	0.60	0.06	-0.69	-0.41	-0.07	0.40	-0.67	
1126	-----	-----	-----	-----	-----	-----	-----	-----	
1131	-----	-----	-----	-----	-----	-----	-----	-----	
1134	-----	-----	-----	-----	-----	-----	-----	-----	
1138	-----	-----	-----	-----	-----	-----	-----	-----	
1140	-----	-----	-----	-----	-----	-----	-----	-----	
1161	-----	-----	-----	-----	-----	-----	-----	-----	
1162	-----	-----	-----	-----	-----	-----	-----	-----	
1175	-----	-----	-----	-----	-----	-----	-----	-----	
1177	-----	-----	-----	-----	-----	-----	-----	-----	
1194	-----	-----	-----	-----	-----	-----	-----	-----	
1201	-----	-----	-----	-----	-----	-----	-----	-----	
1205	-----	-----	-----	-----	-----	-----	-----	-----	
1215	-----	-----	-----	-----	-----	-----	-----	-----	
1231	-----	-----	-----	-----	-----	-----	-----	-----	
1233	-----	-----	-----	-----	-----	-----	-----	-----	
1259	-0.20	-0.28	-0.40	-0.42	-0.42	-0.65	-0.68	-0.25	
1264	-----	-----	-----	-----	-----	-----	-----	-----	
1269	-----	-----	-----	-----	-----	-----	-----	-----	
1271	-----	-----	-----	-----	-----	-----	-----	-----	
1275	-----	-----	-----	-----	-----	-----	-----	-----	
1419	-----	-----	-----	-----	-----	-----	-----	-----	
1425	-----	-----	-----	-----	-----	-----	-----	-----	
1427	-----	-----	-----	-----	-----	-----	-----	-----	
1428	-----	-----	-----	-----	-----	-----	-----	-----	
1431	-----	-----	-----	-----	-----	-----	-----	-----	
1510	-----	-----	-----	-----	-----	-----	-----	-----	
1520	-----	-----	-----	-----	-----	-----	-----	-----	
1621	-----	-----	-----	-----	-----	-----	-----	-----	
1631	-----	-----	-----	-----	-----	-----	-----	-----	
1633	-----	-----	-----	-----	-----	-----	-----	-----	
1635	-----	-----	-----	-----	-----	-----	-----	-----	
1636	-----	-----	-----	-----	-----	-----	-----	-----	
1650	-----	-----	-----	-----	-----	-----	-----	-----	
1654	-----	-----	-----	-----	-----	-----	-----	-----	
1707	-----	-----	-----	-----	-----	-----	-----	-----	
1710	0.20	0.75	0.35	0.41	0.26	0.21	-1.39	-1.24	
1712	0.91	0.91	0.62	0.00	0.26	-----	-----	-0.03	
1720	-----	-----	-----	-----	-----	-----	-----	-----	
1724	-0.37	-0.43	-0.64	-0.77	-0.69	0.00	0.59	0.65	
1728	-----	-----	-----	-----	-----	-----	-----	-----	
1740	-----	-----	-----	-----	-----	-----	-----	-----	
1810	-----	-----	-----	-----	-----	-----	-----	-----	
1811	-----	-----	-----	-----	-----	-----	-----	-----	
1832	-----	-----	-----	-----	-----	-----	-----	-----	
1833	-----	-----	-----	-----	-----	-----	-----	-----	
1842	0.47	-0.18	0.33	0.27	0.22	0.52	3.37	6.04	
1849	-----	-----	-----	-----	-----	-----	-----	-----	
1854	-0.79	0.39	0.81	0.19	-0.55	-0.50	0.51	-0.13	
1906	-----	-----	-----	-----	-----	-----	-----	-----	
1936	-----	-----	-----	-----	-----	-----	-----	-----	
1937	-----	-----	-----	-----	-----	-----	-----	-----	
1938	-----	-----	-----	-----	-----	-----	-----	-----	
1939	-----	-----	-----	-----	-----	-----	-----	-----	
1942	-----	-----	-----	-----	-----	-----	-----	-----	
1948	-----	-----	-----	-----	-----	-----	-----	-----	
2129	0.34	1.06	1.20	1.17	0.80	0.58	-0.34	-0.24	
2160	-----	-----	-----	-----	-----	-----	-----	-----	
7003	-----	-----	-----	-----	-----	-----	-----	-----	

Determination of Aluminium on sample #1004; results in mg/kg

Lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
704	D5184B	22.8		1.09	
1011	IP377	19.9		-0.28	
1038		-----		-----	
1040	D5184B	10.3	G(0.05)	-4.83	
1059	XRF	21		0.24	
1095	IP501	18.4		-0.99	
1108	D5184B	20.7		0.10	
1134	IP501	21.856		0.64	
1138	IP501	18.11		-1.13	
1162	ISO10478	19.4		-0.52	
1201	D5184A	20		-0.24	
1231		-----		-----	
1271	XRF	5.63	G(0.05)	-7.04	
1419	D5184A	23.06		1.21	
1428	IP501	19.1		-0.66	
1510		-----		-----	
1520	IP470	22.3		0.85	
1621	ISO10478	20.8		0.14	
1710	UOP389	12	G(0.01)	-4.03	
1712	ISO10478	21.4		0.43	
1724	IP501	23.61		1.47	
1833	IP501	17.84		-1.26	
1842		-----		-----	
1854	D5184B	19.7		-0.38	
1948		-----		-----	
2129	IP370	19		-0.71	

		Compare with October 2009 #0977	Only AAS:	Only ICP
normality	OK	not OK	OK	OK
n	18	38	5	10
outliers	3	3	0	1
mean (n)	20.50	19.47	20.84	20.20
st.dev. (n)	1.743	3.531	1.692	2.008
R(calc.)	4.88	9.89	4.74	5.62
R(D5184:06-B)	5.91	5.71	5.98	--
R(D5184:06-A	6.91	6.56	--	6.81

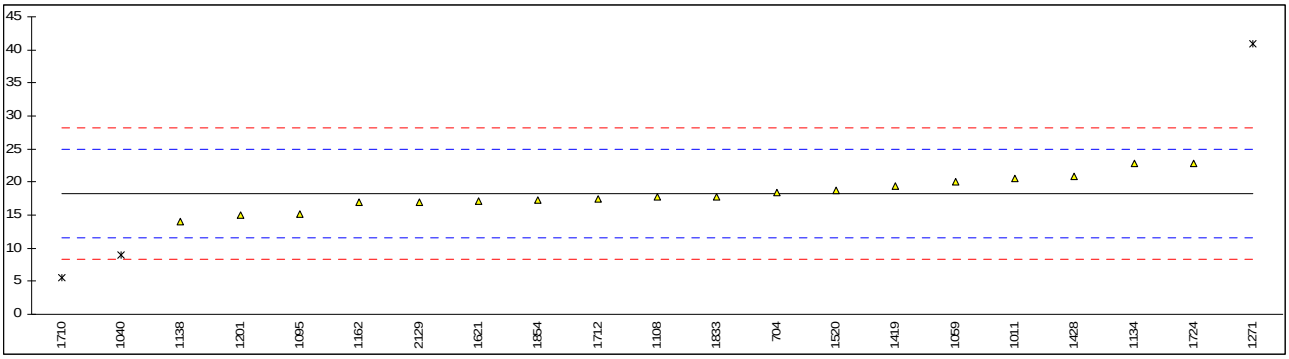


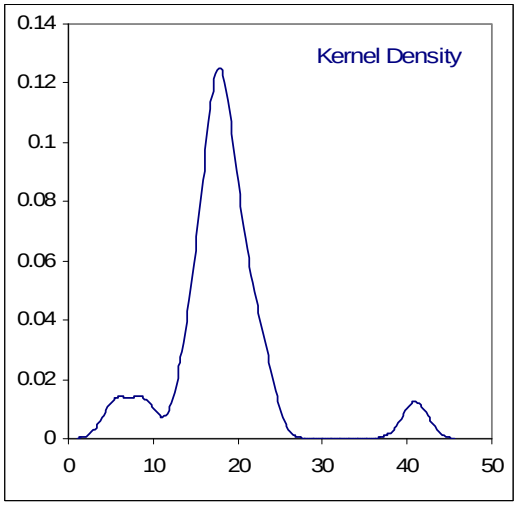


Determination of Silicon on sample #1004; results in mg/kg

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
704	D5184B	18.4		0.03	
1011	IP377	20.5		0.67	
1038		-----		-----	
1040	D5184B	8.9	G(0.05)	-2.83	
1059	IN HOUSE	20		0.52	
1095	IP501	15.1		-0.96	
1108	D5184B	17.8		-0.15	
1134	IP501	22.848		1.38	
1138	IP501	14.01		-1.29	
1162	ISO10478	17.0		-0.39	
1201	D5184A	15		-0.99	
1231		-----		-----	
1271	XRF	40.95	G(0.01)	6.83	
1419	D5184A	19.34		0.32	
1428	IP501	20.8		0.76	
1510		-----		-----	
1520	IP470	18.8		0.15	
1621	ISO10478	17.2		-0.33	
1710	UOP787	5.6	G(0.05)	-3.82	
1712	ISO10478	17.4		-0.27	
1724	IP501	22.86		1.38	
1833	IP501	17.80	C	-0.15	First reported 30.90
1842		-----		-----	
1854	D5184B	17.3		-0.30	
1948		-----		-----	
2129	IP370	17		-0.39	

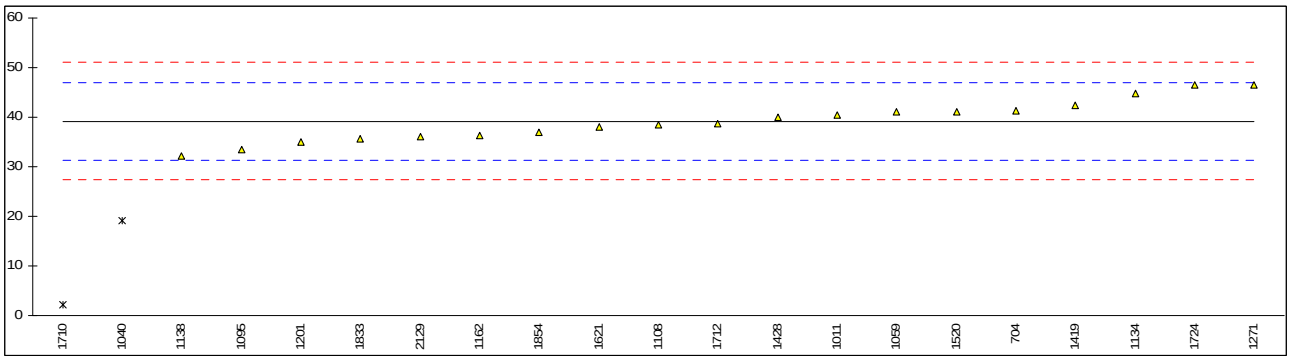
			Compare with October 2009 #0977	Only AAS:	Only ICP
	normality	OK	not OK	OK	OK
	n	18	36	5	10
	outliers	3	3	0	1
	mean (n)	18.29	20.99	17.80	17.68
	st.dev. (n)	2.464	3.510	0.812	2.730
	R(calc.)	6.90	9.83	2.27	7.65
	R(D5184:06-B)	9.29	10.18	9.12	--
	R(D5184:06-A)	6.07	6.97	--	5.87

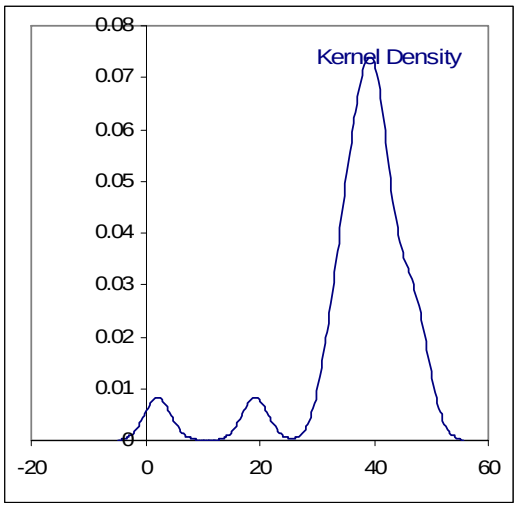




Determination of Total Aluminium/Silicon on sample #1004; results in mg/kg

lab	method	value	mark	z(targ)	remarks
225		-----		-----	
463		-----		-----	
495		-----		-----	
704	D5184B	41.2		0.51	
1011		40.4		0.31	
1038		-----		-----	
1040	D5184B	19.2	G(0.01)	-5.09	
1059	IN HOUSE	41		0.46	
1095	IP501	33.5		-1.45	
1108	D5184B	38.5		-0.18	
1134	IP501	44.704		1.40	
1138	IP501	32.12		-1.80	
1162	ISO10478	36.4		-0.71	
1201	D5184A	35		-1.07	
1231		-----		-----	
1271	XRF	46.58		1.88	
1419	D5184A	42.4		0.82	
1428	CALC	39.9		0.18	
1510		-----		-----	
1520	IP470	41.1		0.48	
1621		38		-0.30	
1710		2.14	G(0.01)	-9.43	After recalculation = 17.6 (z-score -5.49)
1712	ISO10478	38.8		-0.10	
1724	IP501	46.47		1.85	
1833	IP501	35.64	C	-0.90	First reported 48.74
1842		-----		-----	
1854	D5184B	37.0		-0.56	
1948		-----		-----	
2129	IP370	36		-0.81	
					Compare with October 2009 #0977
	normality	OK			OK
	n	19			35
	outliers	2			3
	mean (n)	39.20			40.19
	st.dev. (n)	4.073			5.419
	R(calc.)	11.40			15.17
	R(D5184:06-B)	11.01			11.67
	R(D5184:06-A)	9.20			9.57





APPENDIX 2

1 laboratory in	AUSTRALIA
2 laboratories in	BELGIUM
1 laboratory in	BOSNIA and HERZEGOVINA
1 laboratory in	CÔTE D'IVOIRE
2 laboratories in	CROATIA
1 laboratory in	CYPRUS
2 laboratories in	CZECH REPUBLIC
1 laboratory in	ECUADOR
1 laboratory in	ESTONIA
2 laboratories in	GERMANY
8 laboratories in	GREECE
1 laboratory in	HONG KONG
1 laboratory in	HUNGARY
1 laboratory in	INDIA
1 laboratory in	INDONESIA
1 laboratory in	IRAN
1 laboratory in	ISRAEL
1 laboratory in	LATVIA
1 laboratory in	LITHUANIA
1 laboratory in	P.R. of CHINA
1 laboratory in	POLAND
4 laboratories in	PORTUGAL
2 laboratories in	REPUBLIC OF MACEDONIA
1 laboratory in	ROMANIA
1 laboratory in	SLOVAK REPUBLIC
2 laboratories in	SLOVENIA
1 laboratory in	SPAIN
1 laboratory in	SUDAN
1 laboratory in	SWEDEN
2 laboratories in	THAILAND
4 laboratories in	THE NETHERLANDS
13 laboratories in	TURKEY
2 laboratories in	U.A.E.
2 laboratories in	UKRAINE
9 laboratories in	UNITED KINGDOM

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
ex	= excluded from calculations
E	= error in calculations
n.a.	= not applicable

Literature:

1 i.i.s. Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, January 2010
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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)
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11 P.L. Davies, Fr. Z. Anal. Chem, 331, 513, (1988)
12 J.N. Miller, Analyst, 118, 455, (1993)
13 Analytical Methods Committee Technical brief, No 4.January 2001
14 The Royal Society of Chemistry 2002, Analyst, 2002, 127, page 1359-1364, P.J. Lowthian and M. Thompson. (see http://www.rsc.org/suppdata/an/b2/b205600n/)