Results of Proficiency Test
Methanol
September 2015

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1 INTRODUCTION

Since 1996, a proficiency test for Methanol was organised every year by The Institute for Interlaboratory Studies. During the annual proficiency testing program 2015/2016, it was decided to continue the round robin for the analysis of Methanol in accordance with the latest applicable version of the IMPCA specification (latest version can be found and downloaded from www.impca.be, see ref. 13 in appendix 3). In this interlaboratory study, 85 laboratories in 32 different countries have participated. See appendix 2 for the number of participants per country. In this report, the results of the 2015 proficiency test are presented and discussed. This report is also electronically available through the iis internet site www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, was the organiser of this proficiency test. Sample analyses for fit-for-use and homogeneity testing were subcontracted. To get maximum information from this study it was decided to spike the batch of methanol with acetone, ethanol, p-xylene, inorganic chloride, iron and trimethylamine. All chemicals used to spike with, were >99% pure. The spiked methanol was used to prepare the 1 litre samples as well as the 100 ml samples for UV only.

In this proficiency test, the participants received, depending on the registration, one or two samples of Methanol: 1*1L Methanol (labelled #15160) and/or 1*100 mL Methanol (labelled #15161) for UV only. The participants were requested to report rounded and unrounded results. The unrounded results were preferably used for the statistical evaluations.

2.1 ACCREDITATION

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

2.2 PROTOCOL

The protocol followed in the organisation was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3). This protocol is electronically available through the iis internet site www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and for use by the participating companies only. Disclosure of the information in this report is only allowed by means of the entire report. Use of the contents of this report for third parties is only allowed by written permission of the Institute for Interlaboratory Studies. Disclosure of the identity of one or more of the participating companies will be done only after receipt of a written agreement of the companies involved.

2.4 SAMPLES

The necessary batch of methanol was provided by a methanol producer. To 74.5 kg of this material, the components listed in table 1 were added:

Component	Amount
Acetone	2.96 g
Ethanol	5.18 g
p-Xylene	1.00 g
Sodium Chloride	51.1 mg
Iron(III) Chloride.6H_2O	25.2 mg
Trimethylamine	2.99 mg

Table 1: components that were added to bulk material

After homogenisation in a pre-cleaned metal drum, for the first batch 113 brown glass bottles of 1L were filled and labelled #15160.

The homogeneity of the subsamples #15160 was checked by determination of Density at 20 ^{o}C in accordance with ASTM D4052, Chloride in accordance with IMPCA 002 and Water in accordance with ASTM E1064 on 8 stratified randomly selected samples.

	Density at 20 ^{o}C in kg/L	Chloride in mg/kg	Water in mg/kg
sample #15160-1	0.79151	0.52	852
sample #15160-2	0.79152	0.53	850
sample #15160-3	0.79150	0.51	861
sample #15160-4	0.79151	0.52	854
sample #15160-5	0.79149	0.47	843
sample #15160-6	0.79149	0.49	845
sample #15160-7	0.79149	0.47	858
sample #15160-8	0.79149	0.48	849

Table 2: homogeneity test results of subsamples #15160

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

	Density at 20 ^{o}C in kg/L	Chloride in mg/kg	Water in mg/kg
r (sample #15160)	0.00003	0.07	17
reference test	ASTM D4052:02e1	IMPCA002:98	E1064:02
0.3*R (reference test)	0.00015	0.09	44

Table 3: evaluation of repeatabilities of the subsamples #15160

Each of the calculated repeatabilities determined on sample #15160 was less than 0.3 times the corresponding reproducibility of the reference method. Therefore, homogeneity of the subsamples #15160 was assumed.

From the same spiked Methanol batch approx. 9 litres were used for the sample for UV testing. This amount was divided over 91 brown glass bottles of 100 mL and labelled #15161.
The homogeneity of the subsamples #15161 was checked by determination of UV absorbance at 250 nm and at 268.5 nm (using a 50 mm cell) according IMPCA004 on 8 stratified randomly selected samples.

	UV absorbance at 250 nm	UV absorbance at 268.5 nm
sample #15161-1	0.181	0.259
sample #15161-2	0.182	0.260
sample #15161-3	0.182	0.259
sample #15161-4	0.183	0.259
sample #15161-5	0.182	0.259
sample #15161-6	0.182	0.258
sample #15161-7	0.182	0.259
sample #15161-8	0.182	0.259

Table 4: homogeneity tests of subsamples #15161

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

	UV absorbance at 250 nm	UV absorbance at 268.5 nm
r (sample #15161)	0.0015	0.0015
reference test	IMPCA004:08	IMPCA004:08
0.3*R (reference test)	0.0148	0.0211

Table 5: repeatabilities of the subsamples #15161

The calculated repeatability of sample #15161 was less than 0.3 times the corresponding reproducibility of the reference method. Therefore, homogeneity of the subsamples #15161 was assumed.

To the participants, depending on the registration, 1*1L bottle labelled #15160 and/or 1*100 mL bottle, labelled #15161 were sent on August 19, 2015.

2.5 STABILITY OF THE SAMPLES

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

2.6 ANALYSES

The participants were requested to determine: Acidity, Appearance, Carbonisable Substances Pt/Co, Inorganic Chloride, Colour Pt/Co, Density at 20°C, Specific Gravity 20/20°C, Distillation (IBP, 50% and DP), Iron as Fe, Water Miscibility, Nonvolatile Matter, Permanganate Time Test, Purity ("as received" and "on dry basis"), Acetone, Benzene, Ethanol, Toluene, Sulphur, Trimethylamine and Water (coulometric and titrimetric) on sample #15160. On sample #15161 it was requested to determine the UV absorbance at 300, 268.5, 250, 240, 230 and 220 nm (50mm or 10mm cuvette).

To get comparable results a detailed report form, on which the units were prescribed as well as the required standards and a letter of instructions were prepared and made available on the data entry portal www.kpmd.co.uk/sgs-iis/.
A SDS and a form to confirm receipt of the samples were added to the samples.

3 RESULTS

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

Directly after the deadline, a reminder fax was sent to the laboratories that had not reported results at that moment. Shortly after the deadline, the available results were screened for suspect data. A result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the results. Additional or corrected results are used for data analysis and original results are placed under 'Remarks' in the result tables in appendix 1.

3.1 STATISTICS

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

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

In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon, Grubbs and Rosner outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test and by R(0.01) for the Rosner General ESD test (see appendix 3, no.17). Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of the averages and the standard deviations.

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

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

3.2   GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are under the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected standard. Outliers and other data, which were excluded from the calculations, are represented as a "x". Accepted data are represented as a triangle. Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 3; nos.15 and 16). Also a normal Gauss curve was projected over the Kernel Density Graph.

3.3   Z-SCORES

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

interlaboratory study. The target standard deviation was calculated from the literature reproducibility by division with 2.8.

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

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

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

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

$$|z| < 1 \quad good$$
$$1 < |z| < 2 \quad satisfactory$$
$$2 < |z| < 3 \quad questionable$$
$$3 < |z| \quad unsatisfactory$$

4 EVALUATION

In this interlaboratory study, problems with sample despatch were encountered due to several reasons. Twenty-six participants reported after the final reporting date and twelve other participants did not report any results at all. Not all laboratories were able to report all analyses requested. In total 73 participants reported 1267 results. Observed were 38 outlying results, which is 3.0% of the numerical results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER TEST

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

In the iis PT reports, ASTM methods are referred to with a number (e.g. D1316) and an added designation for the year that the method was adopted or revised (e.g. 1316:06). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. D1316:06 (2012)). In the results tables of Appendix 1 only the method number and year of adoption or revision will be used.

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

Acidity: This determination was not problematic. Only one statistical outlier was observed and the calculated the reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D1613:06(2012).

Appearance: No analytical problems were observed. All labs agreed about the appearance of the sample #15160, which was bright, clear and free of suspended matter.

Carbonisable Substances: This determination was very problematic. Two statistical outliers were observed and seven test results were excluded. The calculated reproducibility after rejection of the suspect data is not at all in agreement with the requirements of ASTM E346:08e1.
Thirty-eight participants reported a test result or range of above 30 Pt/Co. Only seven participants reported a numerical test result of less than 30 Pt/Co. Since the majority of the participants clearly reported a positive result, it was decided to exclude the seven participants with a test result of less than 30 Pt/Co.

Inorganic Chloride: This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers, is in agreement with the requirements of IMPCA002:98. The average recovery of Inorganic Chloride (theoretical increment of 0.55 mg Cl/kg) may be good: "less than 92%" (the actual blank chloride content is unknown).

Colour: This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in good agreement with the requirements of ASTM D1209:05(2011).

Density at 20°C: This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in good agreement with the requirements of ASTM D4052:02e1.

Spec. Gravity 20/20°C: This determination was not problematic. No statistical outliers were observed and the calculated reproducibility is in good agreement with the requirements of ASTM D4052:02e1.

Distillation: No analytical problems were observed. In total one statistical outlier was observed, only for DP. All calculated reproducibilities after rejection of the observed statistical outlier are in agreement with the respective requirements for automated and manual modes of ASTM D1078:11.
Remarkably ten laboratories probably did not correct for barometric pressure. Although the theoretical mid boiling point is 64.5 °C (see table 3 of ASTM D1078), test results of 64.2 (twice), 64.3 (three times), 64.7 (4 times) and 64.9 °C (once) were reported by a several laboratories.

Total Iron: This determination was problematic. Only one statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM E394:09. The average recovery of Iron (theoretical increment of 0.070 mg Iron/kg) may be good: "less than 113%" (the actual blank Iron content is unknown).

Water Miscibility: Thirty-three laboratories reported "Pass" and thirty-three reported "Fail".

Nonvolatile Matter: This determination was problematic. Three statistical outliers were observed and one test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ASTM D1353:13.

Permanganate Time Test: The majority of participants agreed on a result of less than 5 minutes. No statistical outliers were observed, although one participant reported >60 minutes (which is considered a false negative, since the specification limit is a minimum of 60 minutes). Since most test results were expressed as a "less than" and not a numerical result, no z-scores were calculated.

Purity: For the purity "as received" and "on dry basis", in total three statistical outliers were observed and the results of nine other laboratories were excluded for various reasons: One laboratory reported 100.00% for Purity "as received", which does not take into account the impurities that are present in the sample. Four laboratories reported the same test result for both Purity "as received" and Purity "on dry basis". For two laboratories the reported result for "as received" was higher than the result for "on dry basis", which is impossible. And finally two laboratories reported test results for both Purity "as received" and Purity "on dry basis" with a difference that is higher than the water content that was reported by these laboratories.
When the calculated reproducibilities after rejection of the suspect data are compared with the calculated reproducibilities of the proficiency test of 2014 iis14C05, both reproducibilities are not in agreement with the reproducibilities found in the previous round, for "as received" 0.108 vs. 0.014 and for "on dry basis" 0.116 vs. 0.006.

Acetone: This determination may be problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the strict reproducibility limits, estimated using the Horwitz equation. The average recovery of Acetone (theoretical increment of 39.7 mg Acetone/kg) is unsatisfactory: "less than 58%" (the actual blank Acetone content is unknown).

Benzene: Fifty-nine participants agreed on a test result of less than 5 mg/kg. No statistical conclusions were drawn, because the benzene content was near or below the detection limit.

Ethanol: This determination may be problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the strict reproducibility limits, estimated using the Horwitz equation. The average recovery of Ethanol (theoretical increment of 69.5 mg Ethanol/kg) is unsatisfactory: "less than 65%" (the actual blank Ethanol content is unknown).

Toluene: This determination may be problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the strict reproducibility limits, estimated using the Horwitz equation.

Sulphur: No statistical conclusions were drawn, because all reported results were below the application range of ASTM D5453 (1 – 8000 mg/kg).

TMA: This determination may be problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not at all in agreement with the strict reproducibility estimated from the repeatability of ASTM E346:08e1. However, it is in agreement with the estimated reproducibility calculated using the Horwitz equation.
                The average recovery of the TMA (theoretical increment of 40.1 µg TMA/kg) may be good, less than 87% (the actual blank TMA content is unknown). The low number of results may (partly) explain the large spread.

Water (coul.): This determination was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM E1064:12.

Water (titr.): This determination was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM E203:08.

UV-Absorbance: The test results of the participants that used a 50mm and a 10mm cuvette were evaluated separately. The determination (both cuvette sizes) was problematic for a number of laboratories. In total twelve statistical outliers were observed and the results of one participant were excluded, for three of the six reported results were statistical outliers.
                For 50mm cuvette, the calculated reproducibilities for all measured UV absorbances with a known reproducibility were in agreement with the requirements of IMPCA004:08.

Using a 10mm cuvette, this determination is very problematic as only the calculated reproducibility for "UV at 220 nm" was in agreement with the requirements of IMPCA004:08.

Regretfully, for "UV at 240nm and 230nm" no precision data are available.

All participants would reject the sample because of the UV-curve.

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. The average results per sample, calculated reproducibilities and reproducibilities derived from literature standards (in casu ASTM and IMPCA standards) are compared in the next tables.

Parameter	unit	n	average	2.8 * sd	R (lit)
Acidity as acetic acid	mg/kg	68	11.2	8.4	14.0
Appearance		72	Pass	n.a.	n.a.
Carbonisable Substances	Pt/Co	24	61.9	44.8	15.0
Chloride Inorganic as Cl	mg/kg	51	0.51	0.19	0.30
Colour	Pt/Co	54	2.9	3.6	7.0
Density at 20 $^{\circ}$C	kg/L	64	0.7915	0.0002	0.0005
Specific Gravity 20/20°C		69	0.7930	0.0002	0.0005
Initial Boiling Point	°C	65	64.4	0.4	1.0
Mid Boiling Point	°C	64	64.5	0.3	0.4
Dry Point	°C	62	65.2	0.6	0.7
Iron as Fe	mg/kg	50	0.079	0.095	0.042
Water Miscibility		67	33 x 'pass'	33 x 'fail'	n.a.
Nonvolatile Matter	mg/100 mL	49	0.33	0.52	0.14
Permanganate Time Test at 15°C	minutes	51	<5	n.a.	n.a.
Purity "as received"	%M/M	37	99.818	0.109	unknown
Purity on dry basis	%M/M	53	99.906	0.116	unknown
Acetone	mg/kg	57	23.0	10.0	6.4
Benzene	mg/kg	59	<5	n.a.	n.a.
Ethanol	mg/kg	60	44.8	16.6	11.3
Toluene	mg/kg	49	30.1	9.8	8.1
Sulphur	mg/kg	50	<1	n.a.	n.a.
Trimethylamine	µg/kg	7	34.9	25.4	13.2
Water (coulometric)	mg/kg	61	882	112	151
Water (titrimetric)	mg/kg	33	903	162	270

Table 6: Reproducibilities for sample #15160

*For the reproducibility value between brackets it is unknown whether the PTT meets the application range of >60 minutes.

Parameter	unit	n	average	2.8 * sd	R (lit)
UV absorbance at 300 nm (50 mm cell)		27	0.021	0.011	0.032
UV absorbance at 268.5 nm (50 mm cell)		28	0.254	0.031	0.069
UV absorbance at 250 nm (50 mm cell)		27	0.188	0.017	0.019
UV absorbance at 240 nm (50 mm cell)		23	0.273	0.021	unknown
UV absorbance at 230 nm (50 mm cell)		23	0.571	0.069	unknown
UV absorbance at 220 nm (50 mm cell)		26	2.687	0.729	0.768
UV absorbance at 300 nm (10 mm cell)		6	0.006	0.010	0.009
UV absorbance at 268.5 nm (10 mm cell)		6	0.048	0.039	0.013
UV absorbance at 250 nm (10 mm cell)		7	0.034	0.039	0.003
UV absorbance at 240 nm (10 mm cell)		6	0.055	0.018	unknown
UV absorbance at 230 nm (10 mm cell)		7	0.112	0.030	unknown
UV absorbance at 220 nm (10 mm cell)		6	0.671	0.068	0.192

Table 7: Reproducibilities for sample #15161

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

4.3   COMPARISON OF THE PROFICIENCY TEST OF SEPTEMBER 2015 WITH PREVIOUS PTS

	September 2015	September 2014	September 2013	September 2012	September 2011
Number of reporting labs	73	78	73	73	70
Number of results reported	1267	1360	1312	1280	1205
Statistical outliers	38	49	49	54	48
Percentage outliers	3.0%	3.6%	3.7%	4.2%	4.0%

Table 8: comparison with previous proficiency tests.

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

	September 2015		September 2014		September 2013		September 2012	
Acidity as acetic acid	++		++		++		++	
Carbonisable Substances	--		+		+/-		+/-	
Chloride as Cl	+		++		+		++	
Colour	++		++		++		++	
Density at 20 ^{o}C	++		++		++		++	
Specific Gravity 20/20 °C	++		++		++		++	
Distillation	+		+		++		++	
Iron as Fe	--		+		--		--	
Nonvolatile Matter	--		-		++		++	
Acetone	-		-		-		--	
Benzene	n.e.		-		-		++	
Ethanol	-		+/-		-		--	
Toluene	-		n.e.		n.e.		n.e.	
Trimethylamine	--		--		-		--	
Water (coulometric)	+		+		-		--	
Water (titrimetric)	++		++		++		++	
UV absorbance 300nm *)	-	++	-	++	+/-	++	++	++
UV absorbance 268.5 nm *)	--	++	+	-	--	++	-	--
UV absorbance 250 nm *)	--	+	--	-	--	+	-	--
UV absorbance 220 nm *)	++	+	+	++	+	++	++	++

Table 9: comparison determinations against the standard requirements

*) split-up into respective 10 mm and 50 mm cell results

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

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

APPENDIX 1
Determination of Acidity as Acetic Acid on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53	D1613	11.4		0.03	
133	D1613	18.9		1.53	
150	D1613	9.5		-0.35	
169	D1613	0.84		-2.08	
171	D1613	9.1		-0.43	
174	D1613	11.1		-0.03	
311	D1613	9		-0.45	
316		-----		-----	
319	D1613	11.4		0.03	
323	D1613	13		0.35	
333	D1613	14		0.55	
334		-----		-----	
335		-----		-----	
343	D1613	8		-0.65	
344	D1613	13.62		0.48	
345	D1613	12.1		0.17	
346	D1613	13.0		0.35	
347	D1613	12.5		0.25	
357	D1613	11		-0.05	
395	D1613	14.4		0.63	
445	D1613	14		0.55	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	D1613	11.4		0.03	
609	D1613	11		-0.05	
646	D1613	9.7		-0.31	
657	D1613	11.3		0.01	
663	D1613	10.7	C	-0.11	first reported: 0.00107
786	D1613	59.9	R(0.01)	9.73	
823	D1613	9		-0.45	
824	D1613	7		-0.85	
825	D1613	7		-0.85	
840	D1613	10.6		-0.13	
849	D1613	12.0		0.15	
852	D1613	10.6		-0.13	
853	D1613	10.3		-0.19	
855	D1613	10		-0.25	
857	D1613	9.1		-0.43	
858	D1613	9.5		-0.35	
859	D1613	9.0		-0.45	
860	D1613	10.3		-0.19	
861	D1613	11.2		-0.01	
862	D1613	11.2		-0.01	
863	D1613	10.6		-0.13	
864	D1613	10.6		-0.13	
866	D1613	10.2		-0.21	
870	D1613	11		-0.05	
871	D1613	11		-0.05	
902	D1613	11	C	-0.05	first reported: 0.011 mg/kg
912	D1613	12.2		0.19	
913	D1613	10		-0.25	
963		-----		-----	
974	D1613	14.49		0.65	
994	D1613	13.495		0.45	
997	D1613	15.9		0.93	
1009	D1613	9.1		-0.43	
1010	D1613	10		-0.25	
1029	D1613	12.8		0.31	
1041		-----		-----	
1067		-----		-----	
1120	D1613	7.6	C	-0.73	first reported: 30.3
1149		-----		-----	
1181	D1613	4		-1.45	
1201	D1613	13		0.35	
1204	D1613	12		0.15	
1221		-----		-----	
1246		-----		-----	
1256	D1613	15		0.75	
1264	D1613	14.6		0.67	

1276	D1613	17		1.15	
1319	D1613	8	C	-0.65	first reported: 65
1342	D1613	18		1.35	
1343	D1613	20		1.75	
1465	D1613	11.3		0.01	
1510		-----		-----	
1530	D1613	10		-0.25	
1544	D1613	10.15		-0.22	
1656	D1613	12		0.15	
1866	D1613	10.1		-0.23	
6008	D1613	10.7		-0.11	
7018	D1613	10		-0.25	

normality	not OK
n	68
outliers	1
mean (n)	11.23
st.dev. (n)	3.013
R(calc.)	8.44
R(D1613:06)	14.00

Kernel Density
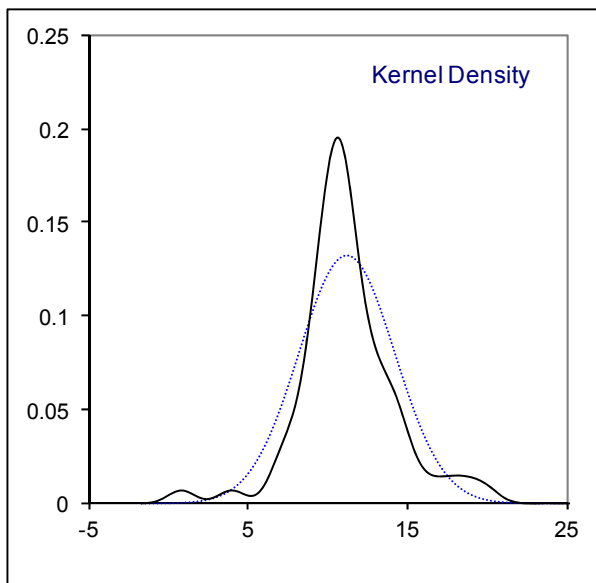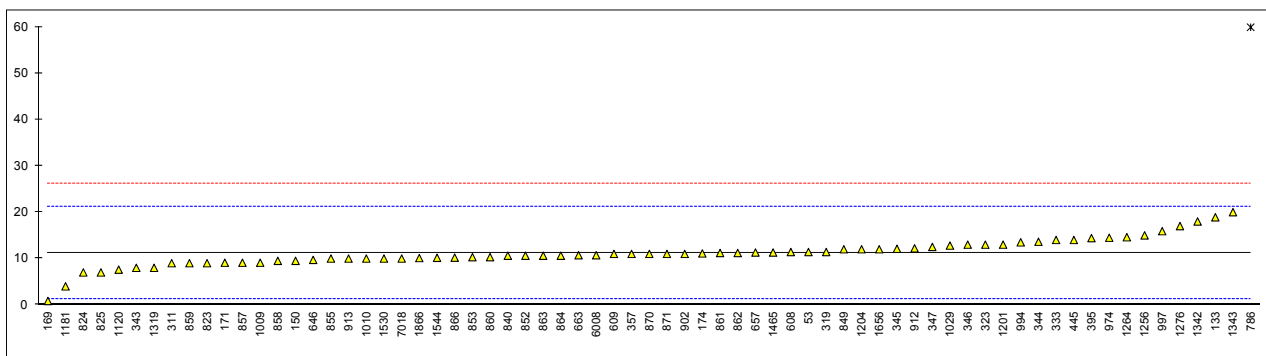
Determination of Appearance on sample #15160;

lab	method	value	mark	z(targ)	remarks
53	IMPCA003	Pass		-----	
133	IMPCA003	CFSM		-----	
150	IMPCA003	C&F		-----	
169	IMPCA003	Pass		-----	
171		C&F		-----	
174	E2680	Pass		-----	
311	IMPCA003	CFSM		-----	
316		-----		-----	
319	IMPCA003	CFSM		-----	
323	IMPCA003	C&B		-----	
333	IMPCA003	CBFFSM		-----	
334	IMPCA003	CFSM		-----	
335		C&B		-----	
343		C&B		-----	
344	IMPCA003	Pass		-----	
345	IMPCA003	Pass		-----	
346	IMPCA003	Pass		-----	Clear and free of particles
347	IMPCA003	Pass		-----	
357	IMPCA003	CFSM		-----	
395	E2680	Pass		-----	
445	IMPCA003	CFSM		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	E2680	Pass		-----	
609	E2680	Pass		-----	
646	IMPCA003	CFSM		-----	
657	IMPCA003	CFSM		-----	
663	IMPCA003	CFSM		-----	
786	IMPCA003	CFSM		-----	
823	IMPCA003	CFSM		-----	
824	IMPCA003	CFSM		-----	
825	IMPCA003	CFSM		-----	
840	E2680	Pass		-----	
849		Clear		-----	
852	Visual	CFSM		-----	
853	IMPCA003	CFSM		-----	
855	E2680	CFSM		-----	
857	IMPCA003	CFSM		-----	
858	IMPCA003	CFSM		-----	
859	Visual	Clear		-----	
860	E2680	Pass		-----	
861	Visual	Clear		-----	
862	E2680	Pass		-----	
863	IMPCA003	CFSM		-----	
864	E2680	CFSM		-----	
866	E2680	Clear		-----	
870	E2680	CFSM		-----	
871		Clear		-----	
902	IMPCA003	Pass		-----	
912	IMPCA003	CFSM		-----	
913	Visual	Pass		-----	
963		-----		-----	
974	IMPCA003	Pass		-----	
994	IMPCA003	Pass		-----	
997	IMPCA003	Pass		-----	
1009		Pass		-----	
1010	IMPCA003	CFSM		-----	
1029	IMPCA003	CFSM		-----	
1041		-----		-----	
1067	IMPCA003	CFSM		-----	
1120	IMPCA003	Pass		-----	
1149		-----		-----	
1181	IMPCA003	C&F		-----	
1201	IMPCA003	C&B		-----	
1204	IMPCA003	Clear		-----	
1221		-----		-----	
1246		-----		-----	
1256	IMPCA003	Pass		-----	
1264	IMPCA003	CFSM		-----	

1276	IMPCA003	CFSM	-----
1319	IMPCA003	CFSM	-----
1342	IMPCA003	CFSM	-----
1343	IMPCA003	C&B	-----
1465	IMPCA003	C&F	-----
1510		-----	-----
1530	IMPCA003	C&F	-----
1544		Pass	-----
1656	IMPCA003	Pass	-----
1866		Pass	-----
6008	IMPCA003	CFSM	-----
7018	IMPCA003	CFSM	-----

normality	n.a.
n	72
outliers	n.a.
mean (n)	Pass / CFSM
st.dev. (n)	n.a.
R(calc.)	n.a.
R(lit)	n.a.

Abbreviations:
C&B   = clear and bright
C&F   = clear and free
CFSM   = clear free from suspended matter

Determination of Carbonizable Substances Pt/Co on sample #15160;

lab	method	value	mark	z(targ)	remarks
53	E346	>30		-----	
133	E346	>100		-----	orange hue
150	E346	43		-3.54	
169		-----		-----	
171	E346	50		-2.23	
174	E346	50		-2.23	
311	E346	>70		-----	
316		-----		-----	
319	E346	98		6.73	
323		-----		-----	
333	E346	60		-0.36	
334		-----		-----	
335	E346	78		3.00	
343	E346	>70		-----	
344	E346	>30		-----	
345		-----		-----	
346	E346	>30		-----	
347	E346	>30		-----	
357	E346	50		-2.23	
395		-----		-----	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	E346	>35		-----	
609	E346	5	ex	-10.63	
646	E346	>30		-----	
657		-----		-----	
663		-----		-----	
786	E346	>70		-----	reported also: Off-Hue
823	E346	52		-1.86	
824	E346	45		-3.16	
825	E346	48		-2.60	
840		-----		-----	
849		-----		-----	
852		-----		-----	
853	E346	65-70		1.04	reported also: Off-Hue
855	E346	65		0.57	reported also: Off-Hue
857	E346	65-70		1.04	reported also: Off-Hue
858	E346	59		-0.55	reported also: Off-Hue
859	E346	80-85	C	3.84	first reported: Off-Hue
860	E346	60-70	C	0.57	first reported: Off-Hue
861	E346	Off-Hue		-----	
862	E346	50-60		-1.30	reported also: Off-Hue
863		-----		-----	
864	E346	65		0.57	reported also: Off-Hue
866	E346	95-100		6.64	reported also: Off-Hue
870	E346	60		-0.36	reported also: Off-Hue
871	E346	65-70	C	1.04	first reported: Off-Hue
902		-----		-----	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994		-----		-----	
997	E346	5	ex	-10.63	
1009	E346	>30		-----	
1010		-----		-----	
1029	E346	7.0	ex	-10.26	
1041		-----		-----	
1067		-----		-----	
1120	E346	<10		<-9.69	false negative?
1149		-----		-----	
1181	E346	5	ex	-10.63	
1201	E346	120	R(0.05)	10.84	
1204	E346	15	ex	-8.76	
1221		-----		-----	
1246		-----		-----	
1256		-----		-----	
1264	E346	75		2.44	

1276	E346	>70		-----
1319	E346	25	ex	-6.90
1342	E346	15	ex	-8.76
1343	E346	33		-5.40
1465	E346	53.0		-1.67
1510		-----		-----
1530		-----		-----
1544		-----		-----
1656	E346	250	R(0.01)	35.11
1866		-----		-----
6008	E346	>30		-----
7018	E346	>30		-----

			All results:
normality		OK	OK
n		24	32
outliers		2 (+7ex)	1
mean (n)		61.9	52.6
st.dev. (n)		16.00	28.39
R(calc.)		44.8	79.5
R(E346:08e1)		15.0	15.0

Test results reported as a range (x-y) were calculated to a value: (x+y)/2 for the statistical evaluation.
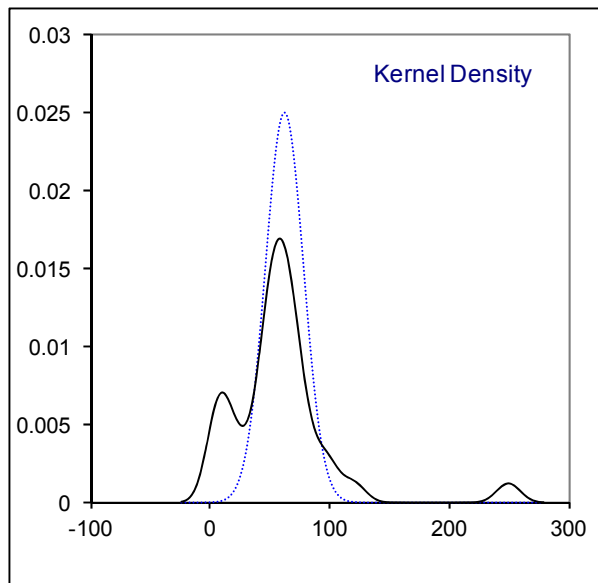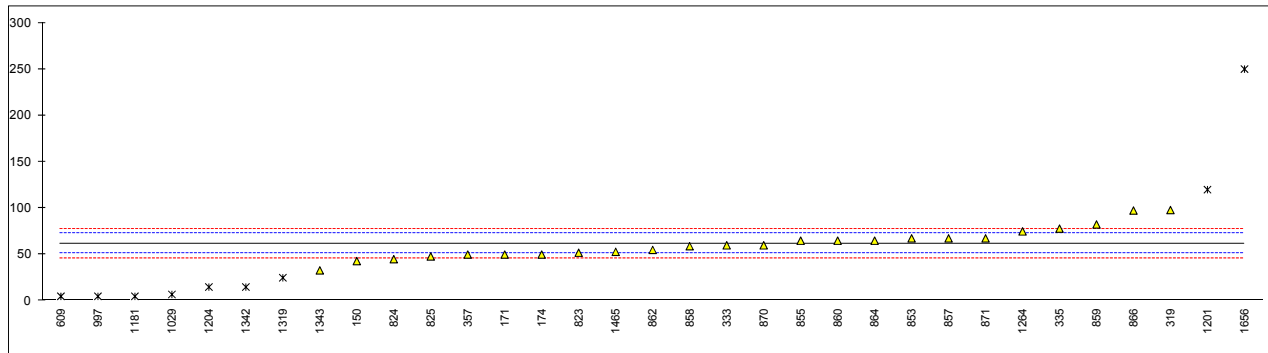
Determination of Chloride Inorganic as Cl on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53	IMPCA002	0.57		0.59	
133	IMPCA002	0.1	R(0.01)	-3.80	
150		-----		-----	
169		-----		-----	
171	IMPCA002	0.55		0.40	
174	D7319	0.44		-0.63	
311	IMPCA002	0.5		-0.07	
316		-----		-----	
319	IMPCA002	0.46		-0.44	
323	IMPCA002	0.5		-0.07	
333	IMPCA002	0.4		-1.00	
334	IMPCA002	0.68		1.61	
335	IMPCA002	0.6		0.87	
343	IMPCA002	0.77	C,R(0.05)	2.45	first reported: 1.4
344	IMPCA002	0.518		0.10	
345		-----		-----	
346	IMPCA002	0.561		0.50	
347	IMPCA002	0.606		0.92	
357	IMPCA002	0.43		-0.72	
395	IMPCA002	0.49		-0.16	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	IMPCA	0.43		-0.72	
609		-----		-----	
646	IMPCA002	0.6		0.87	
657	IMPCA002	0.5		-0.07	
663		-----		-----	
786	IMPCA002	0.549		0.39	
823	IMPCA002	0.43		-0.72	
824	IMPCA002	0.5		-0.07	
825	IMPCA002	0.5		-0.07	
840	IMPCA002	0.54		0.31	
849	IMPCA002	0.453		-0.51	
852	IMPCA002	0.49		-0.16	
853	IMPCA002	0.50		-0.07	
855	IMPCA002	0.53		0.21	
857	IMPCA002	0.50		-0.07	
858	IMPCA002	0.52		0.12	
859	IMPCA002	0.57		0.59	
860	IMPCA002	0.52		0.12	
861	IMPCA002	0.48		-0.25	
862	IMPCA002	0.51		0.03	
863	IMPCA002	0.46		-0.44	
864	IMPCA002	0.60		0.87	
866		-----		-----	
870	IMPCA002	0.53		0.21	
871		-----		-----	
902	IMPCA002	0.51		0.03	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994	IMPCA002	0.54		0.31	
997	IMPCA002	0.313		-1.81	
1009		0.503		-0.04	
1010		-----		-----	
1029	IMPCA002	0.48		-0.25	
1041		-----		-----	
1067	IMPCA002	0.5		-0.07	
1120		<1.0	C	-----	first reported: 0.05
1149		-----		-----	
1181	IMPCA002	0.5038		-0.03	
1201	IMPCA002	0.4		-1.00	
1204		-----		-----	
1221		-----		-----	
1246		-----		-----	
1256	IMPCA002	0.4789		-0.26	
1264	IMPCA002	<0.1		<-3.80	false negative?

1276	IMPCA002	0.54		0.31
1319	IMPCA002	0.49		-0.16
1342	IMPCA002	0.497		-0.10
1343	IMPCA002	0.0	R(0.01)	-4.73
1465	in house	0.4549		-0.49
1510		-----		-----
1530	IMPCA002	0.7		1.80
1544		-----		-----
1656	IMPCA002	<0.25		<-2.40
1866		<0.5		-----
6008	IMPCA002	0.5		-0.07
7018	D512	0.44		-0.63

	normality	suspect		
	n	51		
	outliers	3	spike:	
	mean (n)	0.507	0.55	<92% recovered
	st.dev. (n)	0.0668		
	R(calc.)	0.187		
	R(IMPCA002:98)	0.300		
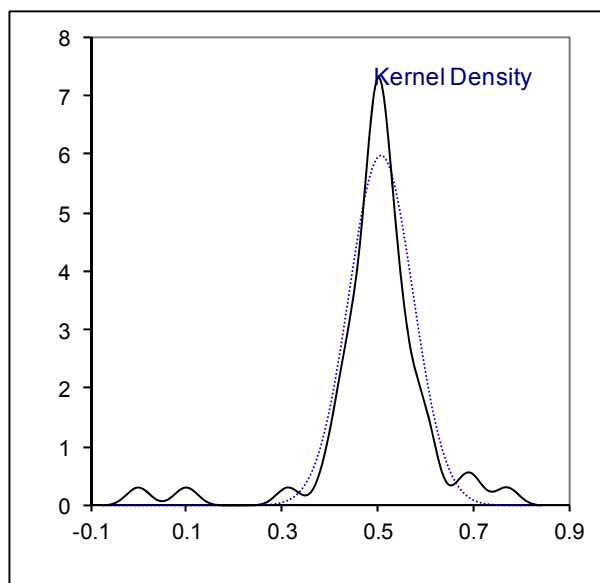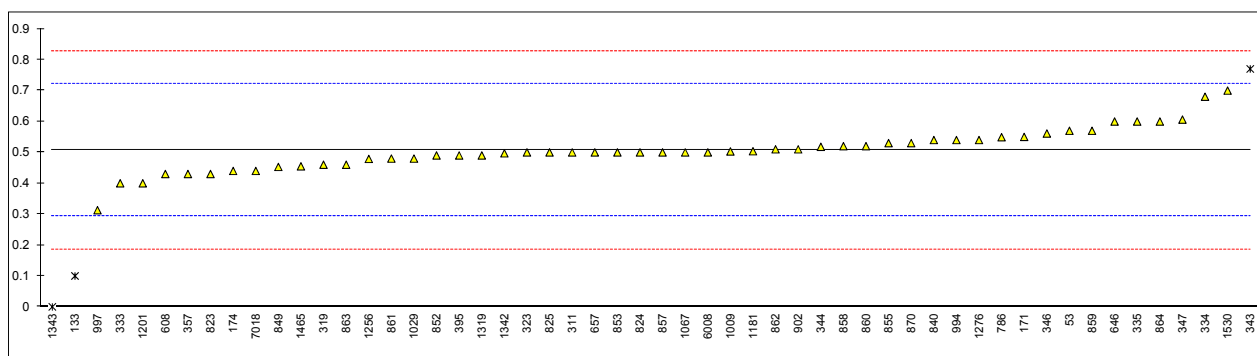
Determination of Colour as Pt/Co on sample #15160;

lab	method	value	mark	z(targ)	remarks
53	D1209	<5		-----	
133	D1209	0		-1.16	
150	D5386	1.1		-0.72	
169	D5386	3.7		0.32	
171	D1209	1		-0.76	
174	D1209	3		0.04	
311	D1209	<5		-----	
316		-----		-----	
319	D1209	3		0.04	
323	D1209	<5		-----	
333	D1209	3		0.04	
334	D1209	5		0.84	
335		-----		-----	
343	D1209	4		0.44	
344	D5386	2.5		-0.16	
345	D1209	2		-0.36	
346	D1209	<5		-----	
347	D5386	1		-0.76	
357	D1209	5		0.84	
395	D1209	<5		-----	
445	D1209	2		-0.36	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	D1209	<5		-----	
609	D1209	3		0.04	
646	D1209	5		0.84	
657	D1209	5		0.84	
663	D1209	3		0.04	
786	D1209	3		0.04	
823	D5386	3		0.04	
824	D1209	3		0.04	
825	D1209	3		0.04	
840	D1209	3		0.04	
849	D1209	<5		-----	
852	D1209	3		0.04	
853	D1209	2		-0.36	
855	D1209	3		0.04	
857	D1209	2		-0.36	
858	D1209	2		-0.36	
859	D1209	3		0.04	
860	D1209	3		0.04	
861	D1209	3		0.04	
862	D1209	3		0.04	
863	D1209	3		0.04	
864	D1209	<5		-----	
866	D1209	3		0.04	
870	D1209	3		0.04	
871	D1209	3		0.04	
902	D5386	2		-0.36	
912		-----		-----	
913	D5386	3		0.04	
963		-----		-----	
974	D1209	1		-0.76	
994	D1209	3		0.04	
997	D1209	<5		-----	
1009	D1209	Pass		-----	
1010		-----		-----	
1029	D1209	4.0		0.44	
1041		-----		-----	
1067	D1209	<5		-----	
1120	D1209	<5		-----	
1149		-----		-----	
1181	D1209	1		-0.76	
1201	D1209	5		0.84	
1204	D1209	5		0.84	
1221		-----		-----	
1246		-----		-----	
1256	D1209	5		0.84	
1264	D1209	<5		-----	

1276	D1209	1	-0.76
1319	D1209	5	0.84
1342	D1209	3	0.04
1343	D1209	0	-1.16
1465	D1209	3.0	0.04
1510		-----	-----
1530	D1209	1	-0.76
1544	D1209	3	0.04
1656	D5386	<5	-----
1866	D1209	3	0.04
6008	D1209	5	0.84
7018	D1209	<2.5	-----

normality	OK	
n	54	
outliers	0	
mean (n)	2.9	
st.dev. (n)	1.30	
R(calc.)	3.6	
R(D1209:05)	7.0	
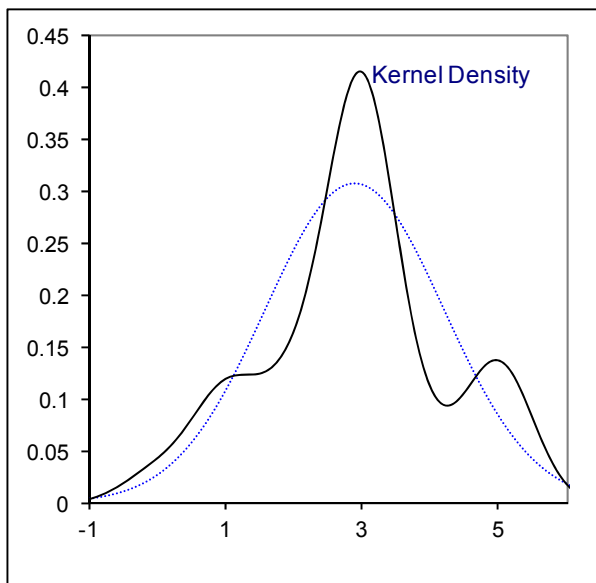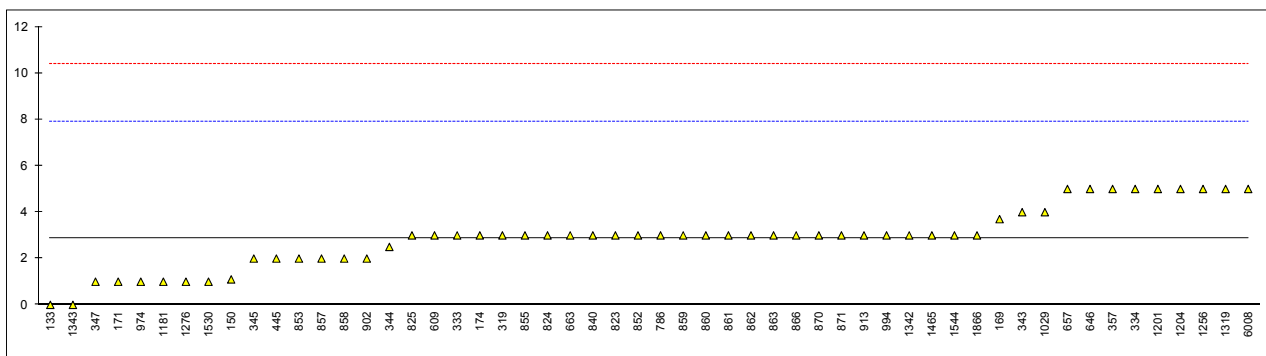
Determination of Density at 20°C on sample #15160; results in kg/L

lab	method	value	mark	z(targ)	remarks
53	D4052	0.79153		0.04	
133	D4052	0.7915		-0.13	
150	D4052	0.7915		-0.13	
169	D4052	0.7916		0.43	
171	D4052	0.79154		0.10	
174	D4052	0.7916		0.43	
311	D4052	0.79151		-0.07	
316		-----		-----	
319		-----		-----	
323	D4052	0.7914		-0.69	
333	ISO12185	0.7915		-0.13	
334	ISO12185	0.7915		-0.13	
335	ISO12185	0.7916		0.43	
343	ISO12185	0.7917		0.99	
344	D4052	0.7915		-0.13	
345	D4052	0.7915		-0.13	
346	D1298	0.7915		-0.13	
347	D4052	0.79152		-0.01	
357	D4052	0.7915		-0.13	
395	D4052	0.7915		-0.13	
445	ISO12185	0.7915	C	-0.13	first reported: 791.5 kg/L
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	D4052	0.79162		0.55	
609	D4052	0.79151		-0.07	
646		-----		-----	
657	D4052	0.7915		-0.13	
663	D4052	0.79150		-0.13	
786	D4052	0.7916		0.43	
823	D4052	0.79154		0.10	
824	ISO12185	0.7915		-0.13	
825	D4052	0.7915		-0.13	
840	D4052	0.79158		0.32	
849	ISO12185	0.79157		0.27	
852	D4052	0.7915		-0.13	
853	D4052	0.79149		-0.18	
855	D4052	0.79162		0.55	
857	D4052	0.79146		-0.35	
858	D4052	0.79149		-0.18	
859	ISO12185	0.7915		-0.13	
860	D4052	0.79153		0.04	
861	D4052	0.7916		0.43	
862	D4052	0.79153		0.04	
863	D4052	0.79156		0.21	
864	D4052	0.7915		-0.13	
866	ISO12185	0.79152		-0.01	
870	D4052	0.7915		-0.13	
871	ISO12185	0.79154		0.10	
902	D4052	0.7916		0.43	
912	D4052	0.7916		0.43	
913	D4052	0.7915		-0.13	
963		-----		-----	
974	D4052	0.7915		-0.13	
994	ISO12185	0.7914		-0.69	
997	D4052	0.79145		-0.41	
1009		-----		-----	
1010	D4052	0.7915		-0.13	
1029	D4052	0.79144		-0.46	
1041		-----		-----	
1067	D4052	0.7915		-0.13	
1120		-----		-----	
1149		-----		-----	
1181	D4052	0.7916		0.43	
1201		-----	W	-----	first reported: 0.7918
1204	D4052	0.7914		-0.69	
1221		-----		-----	
1246		-----		-----	
1256	D4052	0.7915		-0.13	
1264	D4052	0.7916		0.43	

1276	D4052	0.79155		0.15	
1319	D4052	0.7916	C	0.43	first reported: 0.7922
1342	D4052	0.7914		-0.69	
1343	D4052	0.79165		0.71	
1465		-----		-----	
1510		-----		-----	
1530	ISO12185	0.7916		0.43	
1544	D4052	0.7914		-0.69	
1656		-----		-----	
1866	D4052	0.7914		-0.69	
6008		-----		-----	
7018	D4052	0.79151		-0.07	

normality	OK
n	64
outliers	0
mean (n)	0.79152
st.dev. (n)	0.000064
R(calc.)	0.00018
R(D4052:02e1)	0.00050

Kernel Density
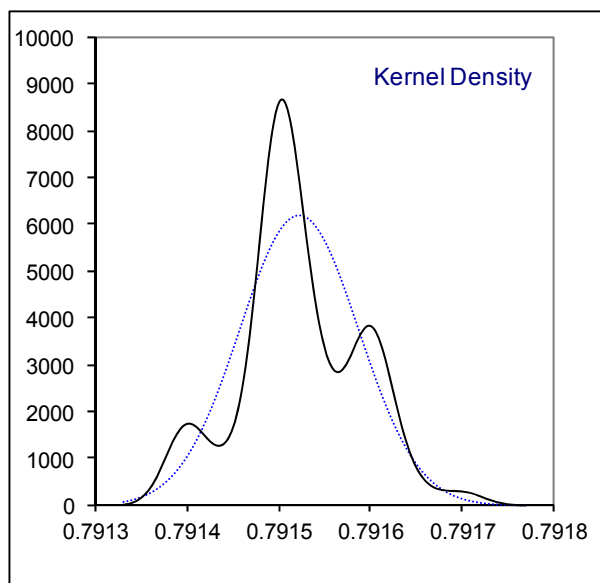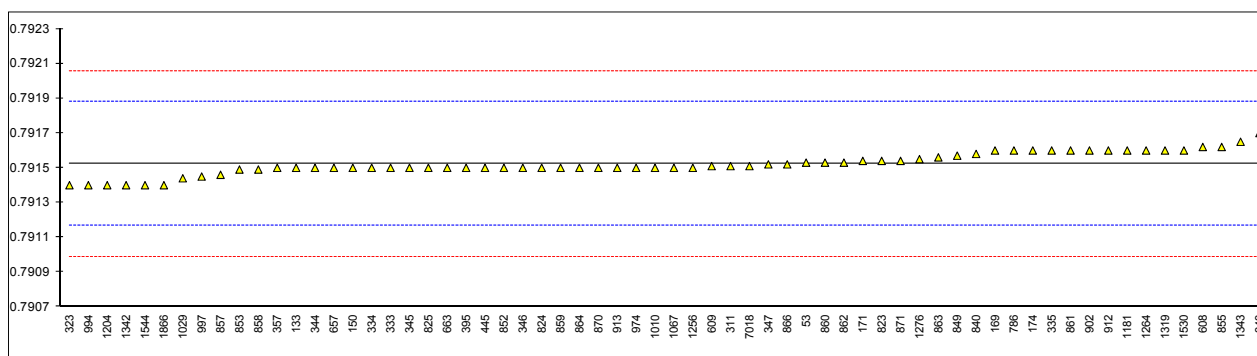
Determination of Specific Gravity 20/20°C on sample #15160;

lab	method	value	mark	z(targ)	remarks
53	D4052	0.79295		0.02	
133	D4052	0.7929		-0.26	
150	D4052	0.7929		-0.26	
169	D4052	0.7930		0.30	
171	D4052	0.79298		0.18	
174	D4052	0.7930		0.30	
311	D4052	0.7929		-0.26	
316		-----		-----	
319	D4052	0.79290		-0.26	
323	D4052	0.7928		-0.82	
333	ISO12185	0.7929		-0.26	
334		-----		-----	
335	ISO12185	0.7930		0.30	
343	ISO12185	0.7931		0.86	
344	D4052	0.7930		0.30	
345	ISO12185	0.7930		0.30	
346	D1298	0.7929		-0.26	
347	D4052	0.79296		0.07	
357	D4052	0.7929		-0.26	
395	D4052	0.7930		0.30	
445	ISO12185	0.7931		0.86	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	D4052	0.7930		0.30	
609	D4052	0.7929		-0.26	
646	D4052	0.7930		0.30	
657	D4052	0.7929		-0.26	
663	D4052	0.79290		-0.26	
786		-----		-----	
823	D4052	0.79296		0.07	
824	ISO12185	0.7929		-0.26	
825	D4052	0.7929		-0.26	
840	D4052	0.79301		0.35	
849	ISO12185	0.79300		0.30	
852	D4052	0.7930		0.30	
853	D4052	0.79291		-0.21	
855	D4052	0.7930		0.30	
857	D4052	0.79288		-0.38	
858	D4052	0.79291		-0.21	
859	ISO12185	0.7930		0.30	
860	D4052	0.79296		0.07	
861	D4052	0.7930		0.30	
862	D4052	0.79295		0.02	
863	D4052	0.79299		0.24	
864	D4052	0.79293		-0.10	
866	ISO12185	0.79292		-0.15	
870	D4052	0.7929		-0.26	
871	ISO12185	0.79297		0.13	
902	D4052	0.7930		0.30	
912	D4052	0.7930		0.30	
913	D4052	0.7929		-0.26	
963		-----		-----	
974	D4052	0.7929		-0.26	
994	ISO12185	0.7928		-0.82	
997	D4052	0.79287		-0.43	
1009	D4052	0.79297		0.13	
1010	D4052	0.7929		-0.26	
1029	D4052	0.79286		-0.49	
1041		-----		-----	
1067	D4052	0.7929		-0.26	
1120	D4052	0.79295		0.02	
1149		-----		-----	
1181	D4052	0.7930		0.30	
1201	ISO12185	0.7932		1.42	
1204	D4052	0.7928		-0.82	
1221		-----		-----	
1246		-----		-----	
1256	D4052	0.7929		-0.26	
1264	D4052	0.7930		0.30	

1276	D4052	0.7930		0.30	
1319	D4052	0.7930	C	0.30	first reported: 0.7936
1342	D4052	0.7928		-0.82	
1343	D4052	0.79307		0.69	
1465	D4052	0.79306		0.63	
1510		-----		-----	
1530	ISO12185	0.7930		0.30	
1544	D4052	0.7928		-0.82	
1656		-----		-----	
1866	D4052	0.7928		-0.82	
6008	D4052	0.7930		0.30	
7018	D4052	0.7929		-0.26	

normality	OK
n	69
outliers	0
mean (n)	0.79295
st.dev. (n)	0.000077
R(calc.)	0.00021
R(D4052:02e1)	0.00050

Kernel Density
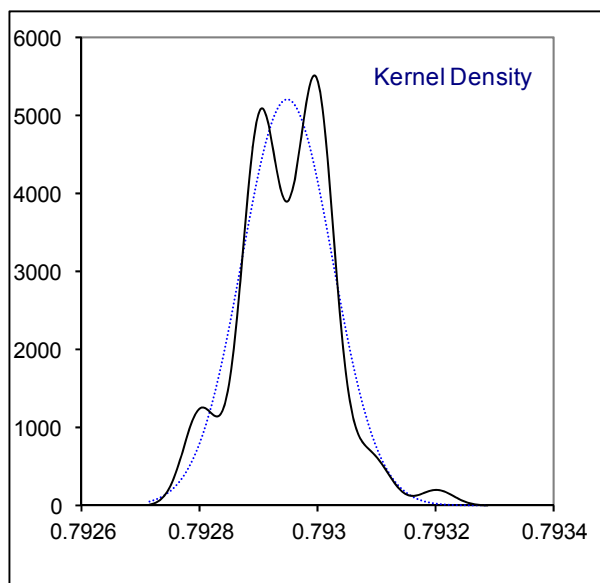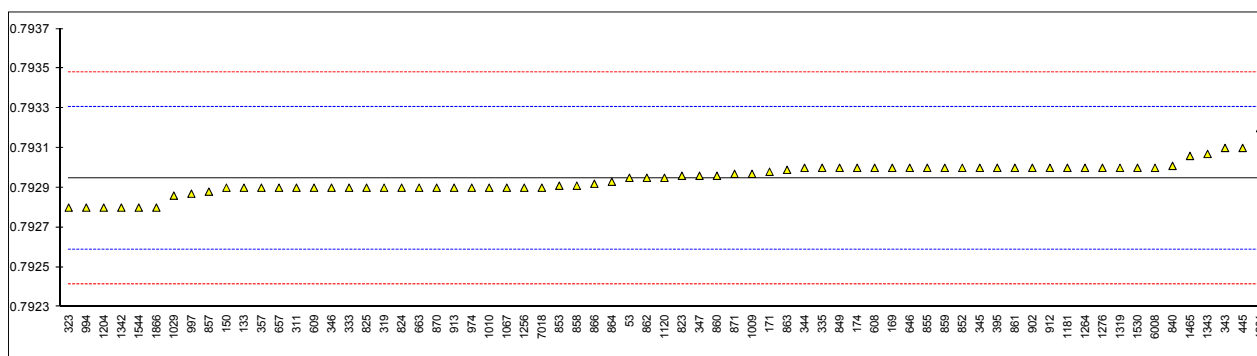
Determination of IBP, 50% recovered and DP on sample #15160; results in °C

lab	method	mode	IBP	mark	z(targ)	50% rec.	mark	z(targ)	FBP	mark	z(targ)
53	D1078		64.6		0.67	64.6		0.61	65.6		1.77
133	D1078	Automated	64.3		-0.16	64.4		-0.66	65.3		0.56
150	D1078	Automated	64.4		0.12	64.5		-0.03	65.3		0.56
169	D1078	Automated	64.4		0.12	64.5		-0.03	65.1		-0.24
171	D1078	Automated	64.4		0.12	64.6		0.61	65.1		-0.24
174	D1078	Automated	64.4		0.12	64.5		-0.03	65..0		-----
311	D1078	Manual	64.4		0.12	64.5		-0.03	65.3		0.56
316			-----		-----	-----		-----	-----		-----
319	D1078	Automated	64.2		-0.44	64.4		-0.66	65.1		-0.24
323	D1078	Manual	64.4		0.12	64.5		-0.03	65.1		-0.24
333	D1078	Automated	64.3		-0.16	64.5		-0.03	65.1		-0.24
334	D1078	Automated	64.4		0.12	64.5		-0.03	65.2		0.16
335			-----		-----	-----		-----	-----		-----
343	D1078	Automated	64.2		-0.44	64.5		-0.03	64.7		-1.85
344	D1078	Automated	64.4		0.12	64.5		-0.03	65.0		-0.64
345	D1078	Automated	64.4		0.12	64.5		-0.03	65.2		0.16
346			-----		-----	-----		-----	-----		-----
347	D1078	Automated	64.4		0.12	64.5		-0.03	65.1		-0.24
357	D1078	Automated	64.4		0.12	64.5		-0.03	65.2		0.16
395	D1078	Manual	64.3		-0.16	64.5		-0.03	64.8		-1.45
445	D1078	Manual	64.5		0.39	64.6		0.61	65.5		1.37
463			-----		-----	-----		-----	-----		-----
528			-----		-----	-----		-----	-----		-----
529			-----		-----	-----		-----	-----		-----
551			-----		-----	-----		-----	-----		-----
554			-----		-----	-----		-----	-----		-----
557			-----		-----	-----		-----	-----		-----
608			-----		-----	-----		-----	-----		-----
609	D1078	Manual	64.2		-0.44	64.4		-0.66	65.0		-0.64
646	D1078	Manual	64.25		-0.30	-----		-----	65.05		-0.44
657	D1078	Manual	64.4		0.12	64.5		-0.03	65.3		0.56
663	D1078	Automated	64.40		0.12	64.50		-0.03	65.05		-0.44
786	D1078	Manual	64.4		0.12	64.5		-0.03	64.7		-1.85
823			-----		-----	-----		-----	-----		-----
824	D1078	Automated	64.4		0.12	64.6		0.61	65.4		0.96
825	D1078	Automated	64.5		0.39	64.7		1.24	65.1		-0.24
840	D1078	Automated	64.41		0.14	64.50		-0.03	64.77		-1.57
849	D1078	Manual	64.4		0.12	64.5		-0.03	65.1		-0.24
852	D1078	Manual	64.4		0.12	64.5		-0.03	65.2		0.16
853	D1078	Manual	64.4		0.12	64.5		-0.03	65.3		0.56
855	D1078	Manual	64.4		0.12	64.5		-0.03	65.2		0.16
857	D1078	Manual	64.4		0.12	64.5		-0.03	65.1		-0.24
858	D1078	Manual	64.4		0.12	64.5		-0.03	65.4		0.96
859	D1078	Manual	64.4		0.12	64.5		-0.03	65.2		0.16
860	D1078	Manual	64.4		0.12	64.5		-0.03	65.2		0.16
861	D1078	Manual	64.4		0.12	64.5		-0.03	65.2		0.16
862	D1078	Manual	64.4		0.12	64.5		-0.03	65.1		-0.24
863	D1078	Manual	64.3		-0.16	64.5		-0.03	65.5		1.37
864	D1078	Manual	64.4		0.12	64.5		-0.03	65.2		0.16
866	D1078	Manual	64.3		-0.16	64.5		-0.03	65.4		0.96
870	D1078	Manual	64.4		0.12	64.5		-0.03	65.2		0.16
871	D1078	Manual	64.3		-0.16	64.5		-0.03	65.1		-0.24
902	D1078	Manual	64.38		0.06	64.60		0.61	64.98		-0.72
912	D1078	Manual	64.3		-0.16	64.5		-0.03	65.3		0.56
913	D1078	Manual	64.3		-0.16	64.5		-0.03	-----		-----
963			-----		-----	-----		-----	-----		-----
974	D1078	Automated	64.4		0.12	64.5		-0.03	65.1		-0.24
994	D1078	Manual	64.4		0.12	64.5		-0.03	65.2		0.16
997	D1078	Manual	64.0		-1.00	64.2		-1.93	65.0		-0.64
1009			-----		-----	-----		-----	-----		-----
1010			-----		-----	-----		-----	-----		-----
1029	D1078	Automated	64.3		-0.16	64.5		-0.03	65.2		0.16
1041			-----		-----	-----		-----	-----		-----
1067	D1078	Manual	64.2		-0.44	64.5		-0.03	65.0		-0.64
1120	D1078	Automated	64.1		-0.72	64.3		-1.30	65.2		0.16
1149			-----		-----	-----		-----	-----		-----
1181	D1078	Automated	64.0		-1.00	64.6		0.61	65.1		-0.24
1201	D1078	Automated	64.4		0.12	64.5		-0.03	65.3		0.56
1204	D1078	Automated	64.3		-0.16	64.5		-0.03	66.7	R(0.01)	6.18
1221			-----		-----	-----		-----	-----		-----
1246			-----		-----	-----		-----	-----		-----
1256	D1078	Manual	64.6		0.67	64.7		1.24	65.5		1.37
1264	D1078	Automated	64.7		0.95	64.9		2.52	65.6		1.77

1276	D1078	Automated	64.4	0.12	64.5	-0.03	64.6	-2.25
1319	D1078	Manual	64.5	0.39	64.7	1.24	65.5	1.37
1342	D1078	Automated	64.5	0.39	64.6	0.61	65.3	0.56
1343	D1078	Automated	64.6	0.67	64.7	1.24	65.3	0.56
1465	D1078	Automated	64.3	-0.16	64.4	-0.66	65.1	-0.24
1510			-----	-----	-----	-----	-----	-----
1530	D1078	Manual	64.17	-0.53	64.27	-1.49	64.67	-1.97
1544	D1078	Manual	64.4	0.12	64.5	-0.03	65.0	-0.64
1656	D1078	Manual	64.1	-0.72	64.3	-1.30	65.0	-0.64
1866			-----	-----	-----	-----	-----	-----
6008	D1078	Automated	64.4	0.12	64.5	-0.03	65.2	0.16
7018	D1078	Manual	64.1	-0.72	64.2	-1.93	65.3	0.56
	normality		suspect		not OK		OK	
	n		65		64		62	
	outliers		0		0		1	
	mean (n)		64.36		64.50		65.16	
	st.dev. (n)		0.130		0.109		0.213	
	R(calc.)		0.36		0.30		0.60	
	R(D1078:11)	Automated	1.00		0.44		0.70	
	R(D1078:11)	Manual	0.69		0.42		0.85	
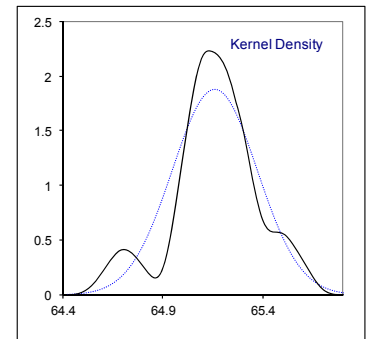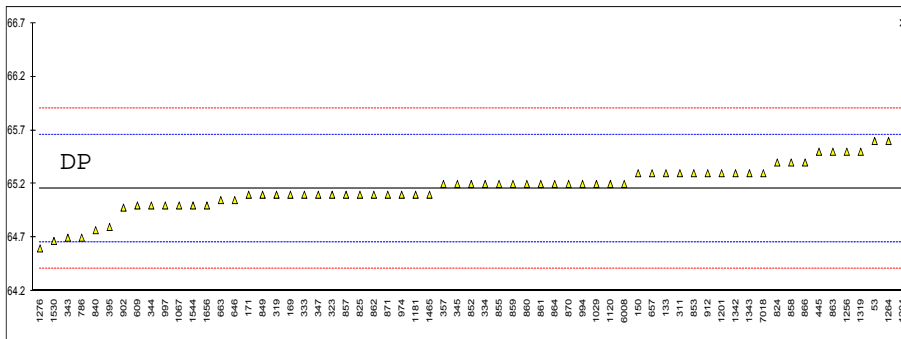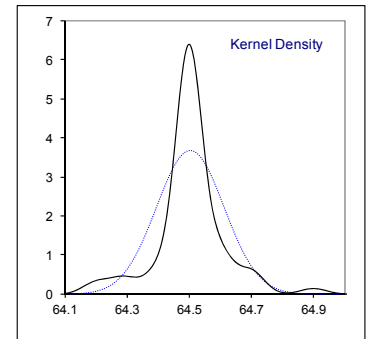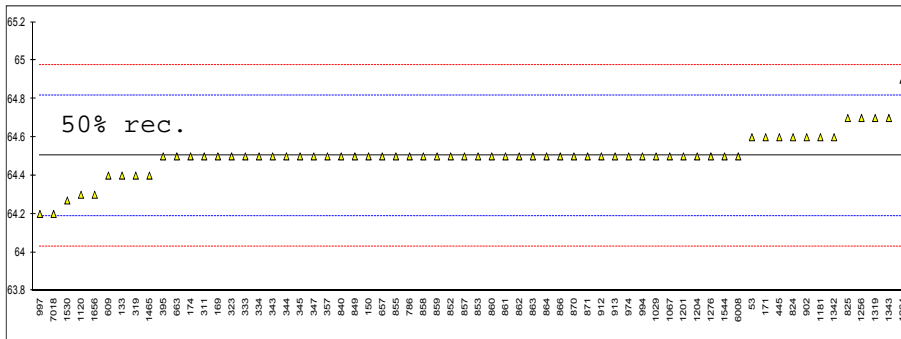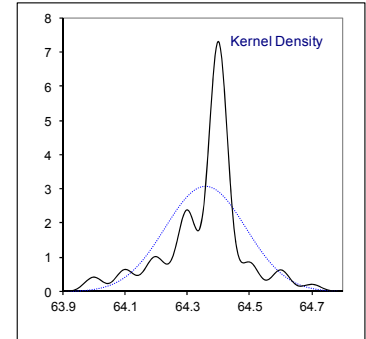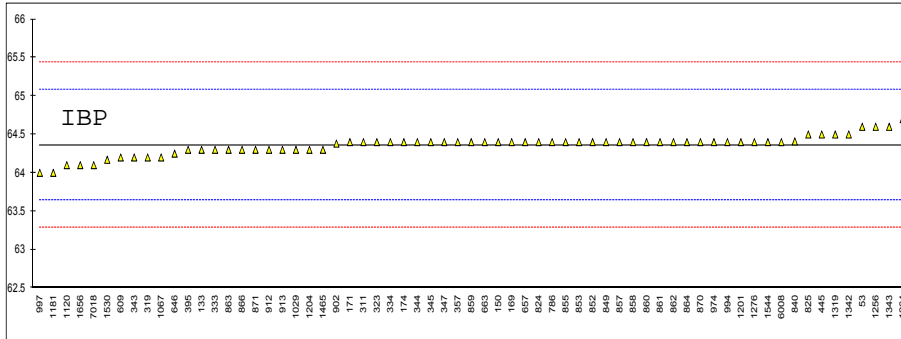
Determination of Iron as Fe on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53	E394	0.09		0.71	
133	E394	0.513	R(0.01)	28.45	
150		-----		-----	
169		-----		-----	
171	E394	0.07		-0.60	
174	E394	0.06		-1.25	
311	E394	0.04		-2.57	
316		-----		-----	
319	E394	0.13071		3.38	
323	E394	<0.01		<-4.62	false negative?
333	E394	0.08		0.06	
334		-----		-----	
335		-----		-----	
343		-----		-----	
344	E394	<0,1		-----	
345		-----		-----	
346		-----		-----	
347	E394	0.086		0.45	
357	E394	0.07		-0.60	
395		-----		-----	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609	E394	0.056		-1.52	
646	E394	0.06		-1.25	
657	E394	0.18		6.62	
663	E394	0.074		-0.34	
786	E394	0.10		1.37	
823	E394	0.10		1.37	
824	E394	0.09		0.71	
825		-----		-----	
840	E394	0.102		1.50	
849	E394	0.070		-0.60	
852	E394	0.095		1.04	
853	E394	0.104		1.63	
855	E394	0.105		1.70	
857	E394	0.098		1.24	
858	E394	0.10		1.37	
859	E394	0.126		3.07	
860	E394	0.10		1.37	
861	E394	0.082		0.19	
862	E394	0.09		0.71	
863	E394	0.089		0.65	
864	E394	0.10		1.37	
866	E394	0.083		0.25	
870	E394	0.10		1.37	
871	E394	0.102		1.50	
902	E394	0.1067		1.81	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994	E394	0.021		-3.81	
997	E394	0.015		-4.21	
1009	E394	0.0621		-1.12	
1010		-----		-----	
1029	E394	0.0214		-3.79	
1041		-----		-----	
1067		-----		-----	
1120	in house	0.02		-3.88	
1149		-----		-----	
1181	E394	0.0552		-1.57	
1201	E394	0.10		1.37	
1204	E394	0.080		0.06	
1221		-----		-----	
1246		-----		-----	
1256	E394	0.116		2.42	
1264	E394	0.03		-3.22	

1276	E394	0.034	-2.96	
1319	E394	0.11	2.03	
1342	E394	0.011	-4.47	
1343	E394	<0.1	-----	
1465	E394	0.038	-2.70	
1510		-----	-----	
1530	E394	0.076	-0.20	
1544		-----	-----	
1656	E394	<0.01	-4.62	false negative?
1866	E394	0.079	-0.01	
6008	E394	0.038	-2.70	
7018	E394	0.11	2.03	

	normality	OK		
	n	50		
	outliers	1	spike:	
	mean (n)	0.0791	0.070	<113% recovery
	st.dev. (n)	0.03390		
	R(calc.)	0.0949		
	R(E394:09)	0.0419		

Kernel Density
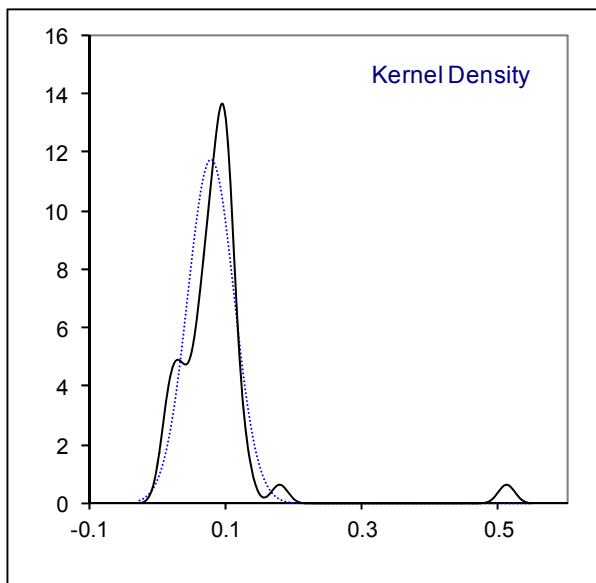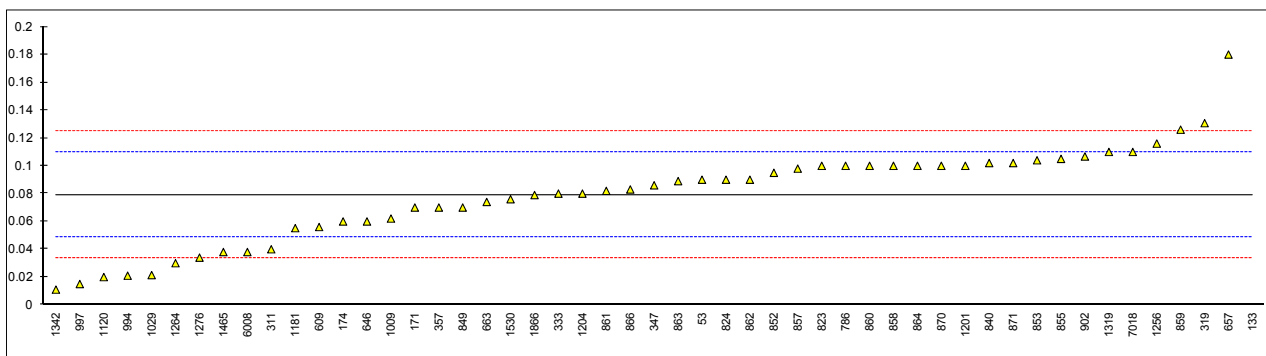
Determination of Miscibility with water on sample #15160;

lab	method	value	mark	z(targ)	remarks
53	D1722	Fail		-----	
133	D1722	Pass		-----	
150	D1722	Pass		-----	
169	D1722	Pass		-----	
171	D1722	Pass		-----	
174	D1722	Pass		-----	
311	D1722	Fail		-----	
316		-----		-----	
319	D1722	Fail		-----	
323	D1722	Fail		-----	
333	D1722	Pass		-----	
334	D1722	Pass		-----	
335		-----		-----	
343	D1722	Fail		-----	
344	D1722	Fail		-----	
345	D1722	Fail		-----	
346	D1722	Fail		-----	
347	D1722	Fail		-----	
357	D1722	Fail		-----	
395	D1722	Pass		-----	
445	D1722	Pass		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	D1722	Pass		-----	
609	D1722	Pass		-----	
646	D1722	Fail		-----	
657	D1722	Pass		-----	
663	D1722	Pass		-----	
786	D1078	Fail		-----	
823	D1722	Pass		-----	
824	D1722	Pass		-----	
825	D1722	Pass		-----	
840		-----		-----	
849		Fail		-----	
852	D1722	Fail		-----	
853	D1722	Fail		-----	
855	D1722	Fail		-----	
857	D1722	Fail		-----	
858	D1722	Fail		-----	
859	D1722	Fail		-----	
860	D1722	Fail		-----	
861	D1722	Fail		-----	
862	D1722	Fail		-----	
863	D1722	Fail		-----	
864	D1722	Fail		-----	
866	D1722	Fail		-----	
870	D1722	Fail		-----	
871		Fail		-----	
902	D1722	Pass		-----	
912	D1722	Fail		-----	
913		-----		-----	
963		-----		-----	
974	D1722	Pass		-----	
994	D1722	Pass		-----	
997		-----		-----	
1009	D1722	Pass		-----	
1010	D1722	Fail		-----	
1029	D1722	Pass		-----	
1041		-----		-----	
1067	D1722	Fail		-----	
1120	D1722	Pass		-----	
1149		-----		-----	
1181	D1722	Miscible		-----	
1201	D1722	Fail		-----	
1204	D1722	Pass		-----	
1221		-----		-----	
1246		-----		-----	
1256	D1722	Pass		-----	
1264	D1722	Pass		-----	

1276	D1722	Pass	-----
1319	D1722	Fail	-----
1342	D1722	Pass	-----
1343		-----	-----
1465	D1722	Pass	-----
1510		-----	-----
1530	D1722	Pass	-----
1544	D1722	Pass	-----
1656	D1722	Pass	-----
1866		Pass	-----
6008	D1722	Pass	-----
7018	D1722	Fail	-----

normality	n.a.
n	n.a.
outliers	67
mean (n)	33 reported "Pass"
	33 reported "Fail"
	1 reported "Miscible"

Determination of Nonvolatile Matter on sample #15160; results in mg/100 mL

lab	method	value	mark	z(targ)	remarks
53	D1353	<5		-----	
133	D1353	0	ex	-6.49	excluded, for zero is not a real value, see §4.1
150	D1353	0.1		-4.54	
169	D1353	0.0		-6.49	
171	D1353	0.2		-2.58	
174	D1353	0.3		-0.63	
311	D1353	0.7		7.19	
316		-----		-----	
319	D1353	0.68	C	6.80	first reported: 6.8
323	D1353	<1		-----	
333		-----		-----	
334	D1353	0.2		-2.58	
335		-----		-----	
343	D1353	0.299		-0.65	
344	D1353	0.25		-1.60	
345	D1353	0.3		-0.63	
346		-----		-----	
347	D1353	0.4		1.33	
357	D1353	0.8		9.14	
395		-----		-----	
445	D1353	0.36		0.55	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609	D1353	0.3		-0.63	
646		-----		-----	
657	D1353	0.2		-2.58	
663		-----		-----	
786		-----		-----	
823	D1353	0.3		-0.63	
824	D1353	0.2		-2.58	
825	D1353	0.3		-0.63	
840		-----		-----	
849	D1353	0.4		1.33	
852	D1353	0.5		3.28	
853	D1353	0.2		-2.58	
855	D1353	0.3		-0.63	
857	D1353	0.1		-4.54	
858	D1353	0.3		-0.63	
859	D1353	0.5		3.28	
860	D1353	0.3		-0.63	
861		-----		-----	
862	D1353	0.4		1.33	
863	D1353	0.24		-1.80	
864	D1353	0.3		-0.63	
866	D1353	<1		-----	
870	D1353	0.3		-0.63	
871	D1353	0.5		3.28	
902	D1353	0.2		-2.58	
912	D1353	0.5		3.28	
913	D1353	0.28		-1.02	
963		-----		-----	
974	D1353	0.30		-0.63	
994	D1353	0.33		-0.04	
997	D1353	0.5		3.28	
1009	D1353	<1		-----	
1010		-----		-----	
1029	D1353	0.28		-1.02	
1041		-----		-----	
1067		-----		-----	
1120		-----		-----	
1149		-----		-----	
1181	D1353	3	R(0.01)	52.13	
1201	D1353	0.5		3.28	
1204	D1353	0.1		-4.54	
1221		-----		-----	
1246		-----		-----	
1256	D1353	0.8		9.14	
1264	D1353	1.0	R(0.05)	13.05	

1276	D1353	0.4		1.33	
1319	D1353	0.7		7.19	
1342	D1353	0.054		-5.43	
1343	D1353	<0.0001		<-6.32	false negative?
1465	D1353	0.2		-2.58	
1510		-----		-----	
1530	D1353	0.4		1.33	
1544	D1353	0.30		-0.63	
1656	D1353	<1		-----	
1866		5.6	C,R(0.01)	102.93	first reported: 56
6008	D1353	0.1		-4.54	
7018	D1353	0.1		-4.54	

normality	OK
n	49
outliers	3 (+1ex)
mean (n)	0.332
st.dev. (n)	0.1846
R(calc.)	0.517
R(D1353:13)	0.143

Kernel Density
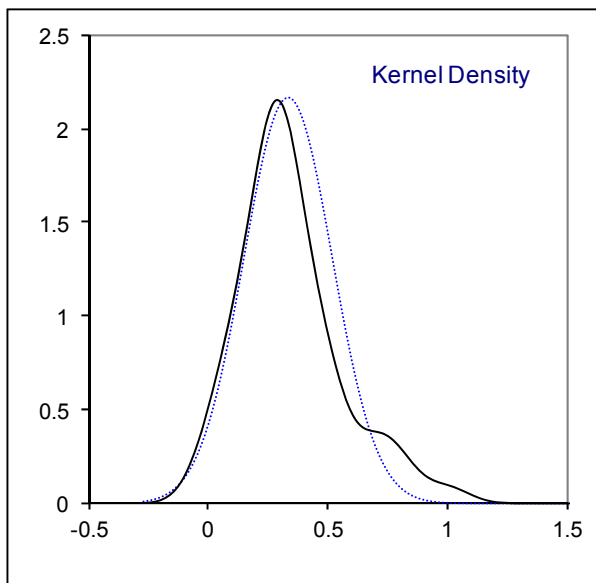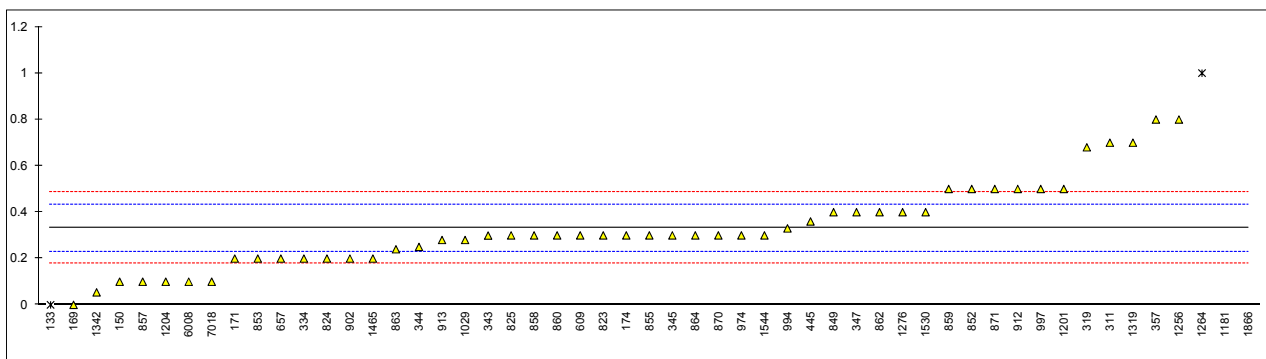
Determination of Permanganate Time Test @ 15°C on sample #15160; results in minutes

lab	method	value	mark	z(targ)	remarks
53	D1363	<30		-----	
133	D1363	5		-----	
150	D1363	<1		-----	
169		-----		-----	
171	D1363	0		-----	
174	D1363	<1		-----	
311	D1363	1		-----	
316		-----		-----	
319	D1363	5		-----	
323	D1363	<5		-----	
333	D1363	<15		-----	
334	D1363	<15		-----	
335		-----		-----	
343	D1363	<50		-----	
344	D1363	<1		-----	
345	D1363	<1		-----	
346	D1363	<1		-----	
347	D1363	<1		-----	
357	D1363	<1		-----	
395		-----		-----	
445	D1363	0		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	D1363	<1		-----	
609	D1363	1		-----	
646	D1363	<2		-----	
657	D1363	0.5		-----	
663	D1363	0.25		-----	
786	D1363	<1		-----	
823	D1363	0.5		-----	
824	D1363	<1		-----	
825	D1363	0.8		-----	
840		-----		-----	
849	D1363	<1		-----	
852	D1363	<1		-----	
853	D1363	<1		-----	
855	D1363	<1		-----	
857	D1363	<1		-----	
858	D1363	<1		-----	
859	D1363	<1		-----	
860	D1363	0.5		-----	
861	D1363	<1		-----	
862	D1363	<1		-----	
863	D1363	0.5		-----	
864	D1363	<1		-----	
866	D1363	0.5		-----	
870	D1363	<1		-----	
871	D1363	<1		-----	
902	D1363	<50		-----	
912	D1363	0.25		-----	
913	D1363	0.47		-----	reported: 28 sec.
963		-----		-----	
974	D1363	<1		-----	
994	D1363	<60		-----	
997	D1363	<60		-----	
1009	D1363	0.67		-----	
1010	D1363	<5		-----	
1029	D1363	<1	C	-----	first reported: 86 min.
1041		-----		-----	
1067	D1363	<1		-----	
1120	D1363	<50		-----	
1149		-----		-----	
1181	D1363	10		-----	
1201	D1363	1		-----	
1204	D1363	0.16667		-----	
1221		-----		-----	
1246		-----		-----	
1256	D1363	<1		-----	
1264		-----		-----	

1276	D1363	<50	-----	
1319	D1363	<1	-----	
1342	D1363	1	-----	
1343	D1363	>60	-----	false negative?
1465	D1363	<1	-----	
1510		-----	-----	
1530	D1363	0.5	-----	
1544		-----	-----	
1656	D1363	<10	-----	
1866		-----	-----	
6008	D1363	2	-----	
7018	D1363	1	-----	

normality	not OK
n	51
outliers	n.a.
mean (n)	<5
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D1363:06)	n.a.

Determination of Purity "as received" on sample #15160; results in %M/M

lab	method	value	mark	z(targ)	remarks
53		-----		-----	
133	IMPCA001	99.88		-----	
150		-----		-----	
169	E202	100.00	ex	-----	excluded, see §4.1
171	IMPCA001	99.8328		-----	
174	IMPCA001	99.822		-----	
311		-----		-----	
316		-----		-----	
319		-----		-----	
323	IMPCA001	99.85		-----	
333	IMPCA001	99.82		-----	
334		-----		-----	
335		-----		-----	
343	IMPCA001	99.65	ex	-----	excluded, see §4.1
344	IMPCA001	99.7853		-----	
345	IMPCA001	99.86		-----	
346		-----		-----	
347		-----		-----	
357	IMPCA001	99.84		-----	
395		-----		-----	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609		-----		-----	
646		-----		-----	
657	IMPCA001	99.7592		-----	
663		-----		-----	
786		-----		-----	
823	IMPCA001	99.76		-----	
824	IMPCA001	99.78		-----	
825	IMPCA001	99.75	ex	-----	excluded, see §4.1
840	IMPCA001	99.771		-----	
849		-----		-----	
852		99.83		-----	
853	IMPCA001	99.834		-----	
855	IMPCA001	99.836		-----	
857	IMPCA001	99.824		-----	
858	IMPCA001	99.820		-----	
859	IMPCA001	99.814		-----	
860	IMPCA001	99.808		-----	
861	IMPCA001	99.788		-----	
862	IMPCA001	99.820		-----	
863	IMPCA001	99.773		-----	
864	IMPCA001	99.827		-----	
866	IMPCA001	99.795		-----	
870	IMPCA001	99.83		-----	
871		99.816		-----	
902	IMPCA001	99.78		-----	
912		-----		-----	
913	IMPCA001	99.659	R(0.01)	-----	
963		-----		-----	
974		-----		-----	
994	IMPCA001	99.828		-----	
997		-----		-----	
1009		-----		-----	
1010	IMPCA001	99.8390		-----	
1029		-----		-----	
1041		-----		-----	
1067	IMPCA001	99.812		-----	
1120	E346	99.882	ex	-----	excluded, see §4.1
1149		-----		-----	
1181	IMPCA001	99.85489		-----	
1201		-----		-----	
1204	IMPCA001	99.9018		-----	
1221		-----		-----	
1246		-----		-----	
1256	IMPCA001	99.777		-----	
1264	IMPCA001	99.72		-----	

1276	IMPCA001	99.98	ex	-----	excluded, see §4.1
1319		-----		-----	
1342		99.98	ex	-----	excluded, see §4.1
1343	IMPCA001	99.98	R(0.01)	-----	
1465	IMPCA001	99.865		-----	
1510		-----		-----	
1530	IMPCA001	99.765	ex	-----	excluded, see §4.1
1544		-----		-----	
1656	INH-001	99.9		-----	
1866	IMPCA001	99.82		-----	
6008	IMPCA001	99.99	ex	-----	excluded, see §4.1
7018	IMPCA001	99.88	ex	-----	excluded, see §4.1

normality	OK
n	37
outliers	2 (+9ex)
mean (n)	99.8182
st.dev. (n)	0.03876
R(calc.)	0.1085
R(lit.)	unknown	Compare R(iis14C05) = 0.0142

Kernel Density
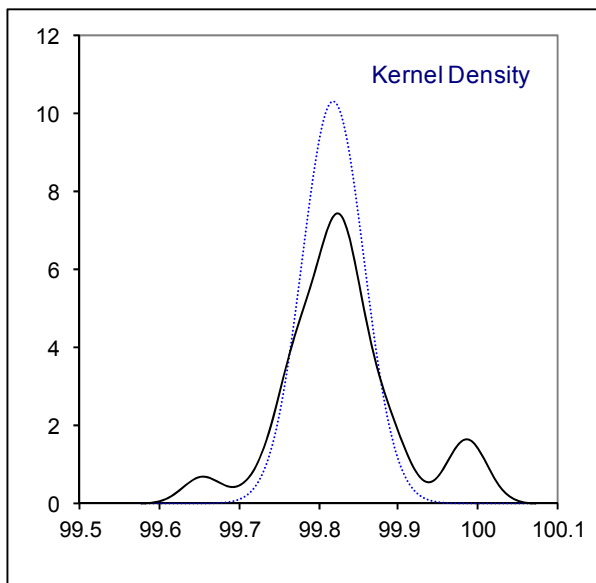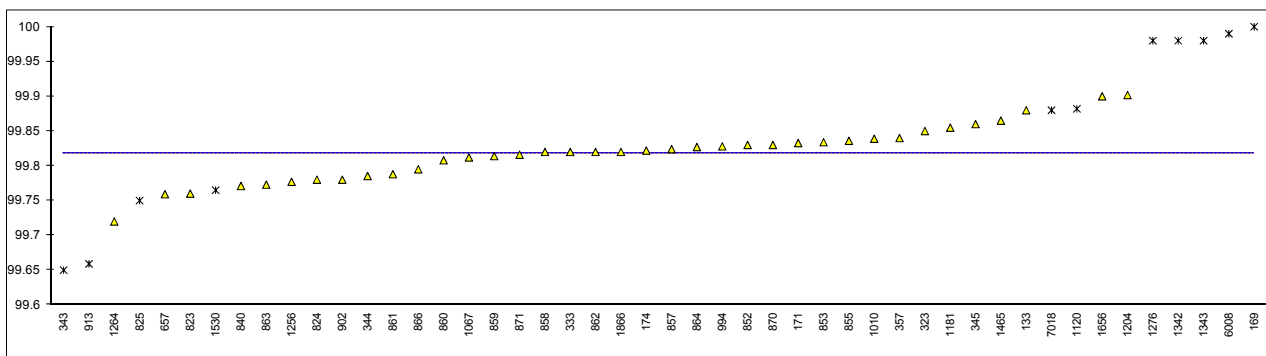
Determination of Purity on dry basis on sample #15160; results in %M/M

lab	method	value	mark	z(targ)	remarks
53	IMPCA001	99.87		-----	
133	IMPCA001	99.99		-----	
150	IMPCA001	99.85		-----	
169		-----		-----	
171	IMPCA001	99.920125		-----	
174	IMPCA001	99.919		-----	
311	IMPCA001	99.92		-----	
316		-----		-----	
319	IMPCA001	99.983		-----	
323	IMPCA001	99.93		-----	
333	IMPCA001	99.91		-----	
334	IMPCA001	99.92		-----	
335		-----		-----	
343	IMPCA001	99.93	ex	-----	excluded, see §4.1
344	IMPCA001	99.8715		-----	
345	IMPCA001	99.94		-----	
346	IMPCA001	99.859		-----	
347	IMPCA001	99.8526		-----	
357	IMPCA001	99.92		-----	
395	IMPCA001	99.989		-----	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609		-----		-----	
646	IMPCA001	99.93		-----	
657	IMPCA001	99.8482		-----	
663	IMPCA001	99.899		-----	
786	IMPCA001	99.8749		-----	
823	IMPCA001	99.86		-----	
824	IMPCA001	99.87		-----	
825	IMPCA001	99.90	ex	-----	excluded, see §4.1
840	IMPCA001	99.868		-----	
849		99.903		-----	
852	IMPCA001	99.92		-----	
853	IMPCA001	99.920		-----	
855	IMPCA001	99.920		-----	
857	IMPCA001	99.911		-----	
858	IMPCA001	99.907		-----	
859	IMPCA001	99.901		-----	
860	IMPCA001	99.895		-----	
861	IMPCA001	99.872		-----	
862	IMPCA001	99.908		-----	
863	IMPCA001	99.860		-----	
864	IMPCA001	99.916		-----	
866	IMPCA001	99.883		-----	
870	IMPCA001	99.92		-----	
871		99.903		-----	
902	IMPCA001	99.87		-----	
912		-----		-----	
913	IMPCA001	99.759	R(0.05)	-----	
963		-----		-----	
974		-----		-----	
994	IMPCA001	99.920		-----	
997		-----		-----	
1009	IMPCA001	99.899		-----	
1010	IMPCA001	99.9240		-----	
1029	IMPCA001	99.9942		-----	
1041		-----		-----	
1067	IMPCA001	99.906		-----	
1120	E346	99.774	ex	-----	excluded, see §4.1
1149		-----		-----	
1181	IMPCA001	99.86289		-----	
1201	IMPCA001	99.91		-----	
1204	IMPCA001	99.9935		-----	
1221		-----		-----	
1246		-----		-----	
1256	IMPCA001	99.860		-----	
1264	IMPCA001	99.8130		-----	

1276	IMPCA001	99.98	ex	-----	excluded, see §4.1
1319	IMPCA001	99.86		-----	
1342		99.885	ex	-----	excluded, see §4.1
1343		-----		-----	
1465	IMPCA001	99.950		-----	
1510		-----		-----	
1530	IMPCA001	99.76	ex	-----	excluded, see §4.1
1544		-----		-----	
1656	INH-001	99.99		-----	
1866	IMPCA001	99.9201		-----	
6008	IMPCA001	99.99	ex	-----	excluded, see §4.1
7018	IMPCA001	99.88	ex	-----	excluded, see §4.1

normality	OK	
n	53	
outliers	1 (+8ex)	
mean (n)	99.9058	
st.dev. (n)	0.04141	
R(calc.)	0.1159	
R(lit.)	unknown	Compare R(iis14C05) = 0.0058

Kernel Density
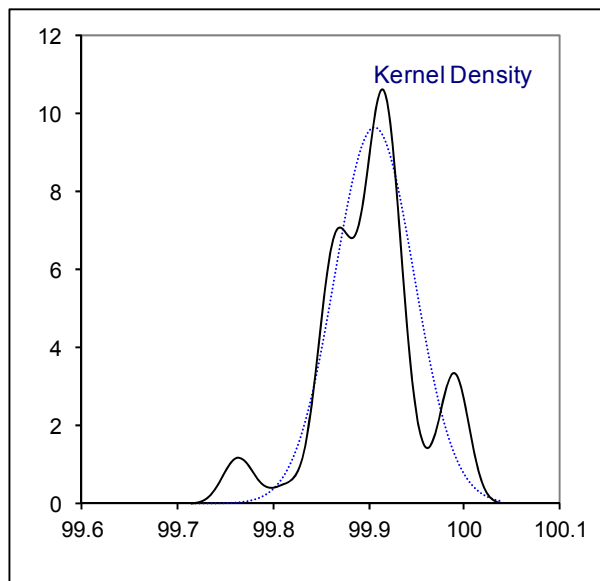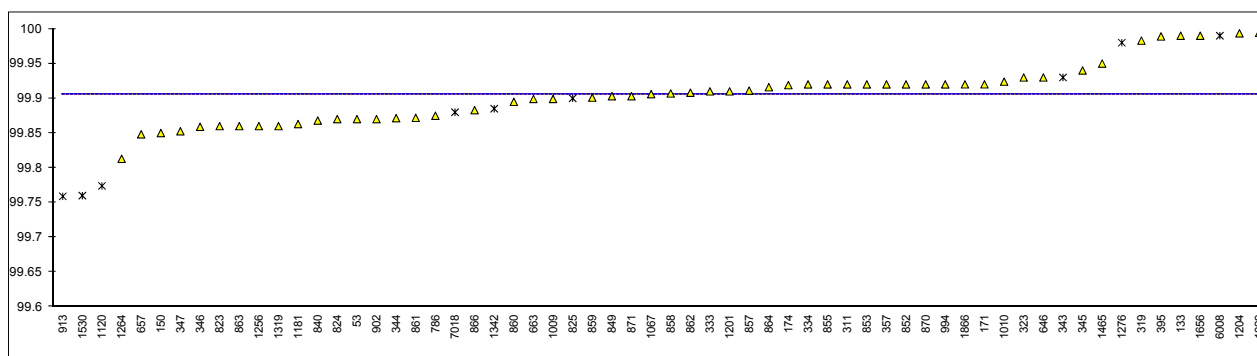
Determination of Acetone content on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53	IMPCA001	33		4.33	
133	IMPCA001	19.9	C	-1.37	first reported 35.8
150	IMPCA001	22		-0.45	
169		-----		-----	
171	IMPCA001	21.00		-0.89	
174	IMPCA001	20.7		-1.02	
311	IMPCA001	29		2.59	
316		-----		-----	
319	IMPCA001	23		-0.02	
323	IMPCA001	22		-0.45	
333		-----		-----	
334	IMPCA001	<10		<-5.67	false negative?
335		-----		-----	
343	IMPCA001	25.3		0.98	
344	IMPCA001	20.548		-1.08	
345	IMPCA001	26		1.29	
346	IMPCA001	19.2		-1.67	
347	IMPCA001	24		0.42	
357	IMPCA001	22		-0.45	
395	IMPCA001	26.63		1.56	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609		-----		-----	
646	IMPCA001	22		-0.45	
657	IMPCA001	28		2.16	
663	IMPCA001	19.8		-1.41	
786	IMPCA001	27.7		2.03	
823	IMPCA001	25		0.85	
824	IMPCA001	25		0.85	
825	IMPCA001	25		0.85	
840	IMPCA001	29.8		2.94	
849		24.1		0.46	
852	IMPCA001	22.5		-0.23	
853	IMPCA001	25.3		0.98	
855	IMPCA001	22.0		-0.45	
857	IMPCA001	23.0		-0.02	
858	IMPCA001	25		0.85	
859	IMPCA001	23.9		0.37	
860	IMPCA001	24		0.42	
861	IMPCA001	26.7		1.59	
862	IMPCA001	24		0.42	
863	IMPCA001	23.0		-0.02	
864	IMPCA001	23.7		0.29	
866	IMPCA001	25.4		1.03	
870	IMPCA001	22.4		-0.28	
871		24.1		0.46	
902	IMPCA001	21		-0.89	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994	IMPCA001	21.04		-0.87	
997		-----		-----	
1009	IMPCA001	25.423		1.04	
1010	IMPCA001	22		-0.45	
1029	IMPCA001	19.87		-1.38	
1041		-----		-----	
1067	IMPCA001	24		0.42	
1120	E346	21.5	C	-0.67	first reported 50.82
1149		-----		-----	
1181	IMPCA001	24.32728		0.56	
1201	IMPCA001	25		0.85	
1204	IMPCA001	21		-0.89	
1221		-----		-----	
1246		-----		-----	
1256	IMPCA001	24		0.42	
1264	IMPCA001	14.9		-3.54	

1276	IMPCA001	11.80		-4.89	
1319	IMPCA001	26		1.29	
1342	IMPCA001	15.2		-3.41	
1343	IMPCA001	40	C,R(0.01)	7.38	first reported 0.0
1465	IMPCA001	18.83		-1.83	
1510		-----		-----	
1530	IMPCA001	66	R(0.01)	18.69	
1544		-----		-----	
1656		<10		<-5.67	false negative?
1866	IMPCA001	19.54		-1.52	
6008	IMPCA001	24.17		0.49	
7018	IMPCA001	18		-2.19	

normality	suspect		
n	57		
outliers	2	Spike:	
mean (n)	23.040	39.7	< 58% recovery
st.dev. (n)	3.5720		
R(calc.)	10.002		
R(Horwitz)	6.437		
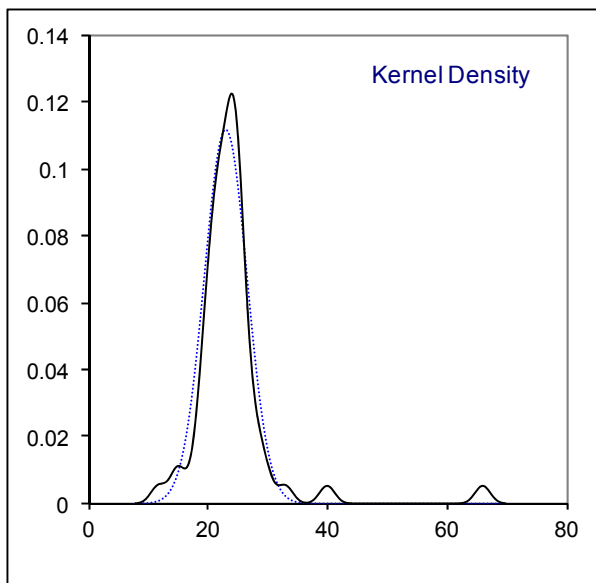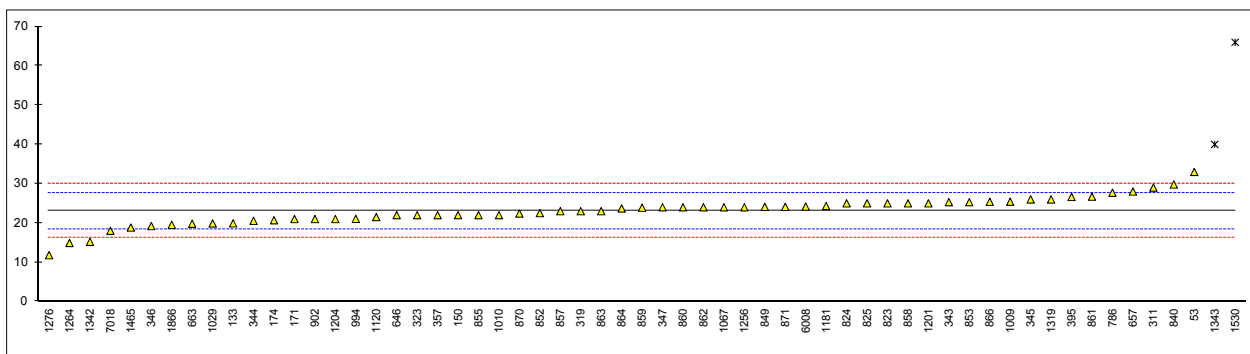
Determination of Benzene content on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53		-----		-----	
133	IMPCA001	0		-----	
150	IMPCA001	1		-----	
169		-----		-----	
171	IMPCA001	<5		-----	
174	IMPCA001	<1		-----	
311	IMPCA001	<5		-----	
316		-----		-----	
319	IMPCA001	0		-----	
323	IMPCA001	<5		-----	
333		-----		-----	
334	IMPCA001	<10		-----	
335		-----		-----	
343	IMPCA001	<5		-----	
344	IMPCA001	<5		-----	
345	IMPCA001	<5		-----	
346	IMPCA001	<5		-----	
347	IMPCA001	<5		-----	
357	IMPCA001	<5		-----	
395	IMPCA001	<5		-----	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609		-----		-----	
646	IMPCA001	4		-----	
657	IMPCA001	<5		-----	
663	IMPCA001	<5		-----	
786	IMPCA001	<5		-----	
823	IMPCA001	<5		-----	
824	IMPCA001	<5		-----	
825	IMPCA001	<5		-----	
840	IMPCA001	<1		-----	
849		<1		-----	
852	IMPCA001	<5		-----	
853	IMPCA001	<1		-----	
855	IMPCA001	<1		-----	
857	IMPCA001	<1		-----	
858	IMPCA001	<1		-----	
859	IMPCA001	<5		-----	
860	IMPCA001	<1		-----	
861	IMPCA001	<5		-----	
862	IMPCA001	0.3		-----	
863	IMPCA001	<5		-----	
864	IMPCA001	<10		-----	
866	IMPCA001	<5		-----	
870	IMPCA001	<1		-----	
871		<1		-----	
902		-----		-----	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994	IMPCA001	<5		-----	
997		-----		-----	
1009	IMPCA001	<5		-----	
1010	IMPCA001	0		-----	
1029		-----		-----	
1041		-----		-----	
1067	IMPCA001	<1		-----	
1120		-----		-----	
1149		-----		-----	
1181	IMPCA001	0		-----	
1201	IMPCA001	0		-----	
1204		-----		-----	
1221		-----		-----	
1246		-----		-----	
1256		-----		-----	
1264	IMPCA001	2.03		-----	

1276	IMPCA001	0.00	-----
1319	IMPCA001	<5	-----
1342		3	-----
1343		-----	-----
1465	IMPCA001	0	-----
1510		-----	-----
1530	IMPCA001	<5	-----
1544		-----	-----
1656		<10	-----
1866	IMPCA001	<5	-----
6008	IMPCA001	0	-----
7018	IMPCA001	<5	-----

normality	n.a.
n	59
outliers	0
mean (n)	<5
st.dev. (n)	n.a.
R(calc.)	n.a.
R(Horwitz)	n.a.

Determination of Ethanol content on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53	IMPCA001	49		1.03	
133	IMPCA001	49.7		1.20	
150	IMPCA001	51		1.52	
169		-----		-----	
171	IMPCA001	42.0		-0.70	
174	IMPCA001	44		-0.21	
311	IMPCA001	45		0.04	
316		-----		-----	
319	IMPCA001	48		0.78	
323	IMPCA001	46		0.29	
333	IMPCA001	54		2.26	
334	IMPCA001	59		3.50	
335		-----		-----	
343	IMPCA001	40.5		-1.07	
344	IMPCA001	43.982		-0.21	
345	IMPCA001	40		-1.20	
346	IMPCA001	35.8		-2.23	
347	IMPCA001	40		-1.20	
357	IMPCA001	42		-0.70	
395	IMPCA001	47.16		0.57	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609		-----		-----	
646	IMPCA001	42		-0.70	
657	IMPCA001	52		1.77	
663	IMPCA001	35.8		-2.23	
786	IMPCA001	45.5		0.16	
823	IMPCA001	47		0.53	
824	IMPCA001	47		0.53	
825	IMPCA001	45		0.04	
840	IMPCA001	42.5		-0.58	
849		45.3		0.11	
852	IMPCA001	46.6		0.43	
853	IMPCA001	44.6		-0.06	
855	IMPCA001	45.1		0.06	
857	IMPCA001	44.3		-0.13	
858	IMPCA001	47		0.53	
859	IMPCA001	43.8		-0.26	
860	IMPCA001	45		0.04	
861	IMPCA001	46.2		0.34	
862	IMPCA001	44		-0.21	
863	IMPCA001	44.0		-0.21	
864	IMPCA001	46.1		0.31	
866	IMPCA001	45.9		0.26	
870	IMPCA001	45.3		0.11	
871		48.4		0.88	
902	IMPCA001	45		0.04	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994	IMPCA001	55.27		2.58	
997		-----		-----	
1009	IMPCA001	47.606		0.68	
1010	IMPCA001	41		-0.95	
1029	IMPCA001	37.92		-1.71	
1041		-----		-----	
1067	IMPCA001	46		0.29	
1120	E346	26.85		-4.45	
1149		-----		-----	
1181	IMPCA001	38.21242		-1.64	
1201	IMPCA001	46		0.29	
1204	IMPCA001	44		-0.21	
1221		-----		-----	
1246		-----		-----	
1256	IMPCA001	42		-0.70	
1264	IMPCA001	49.80		1.22	

1276	IMPCA001	10.46	C,R(0.01)	-8.49	first reported 23.46
1319	IMPCA001	48		0.78	
1342	IMPCA001	32.5		-3.05	
1343	IMPCA001	89	C,R(0.01)	10.91	first reported 17.6
1465	IMPCA001	38.65		-1.53	
1510		-----		-----	
1530	IMPCA001	56		2.76	
1544		-----		-----	
1656		46	C	0.29	first reported <10
1866	IMPCA001	31.8		-3.22	
6008	IMPCA001	41.46		-0.84	
7018	IMPCA001	61		3.99	

normality	suspect			
n	60			
outliers	2		Spike	
mean (n)	44.844		69.5	< 65% recovery
st.dev. (n)	5.9396			
R(calc.)	16.631			
R(Horwitz)	11.334			

Kernel Density
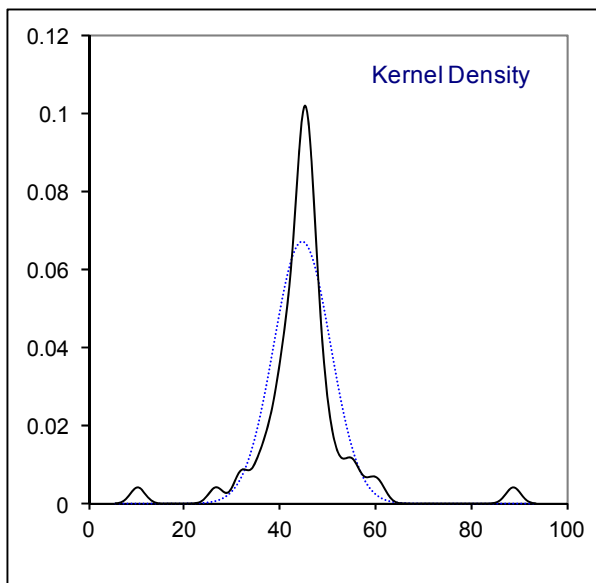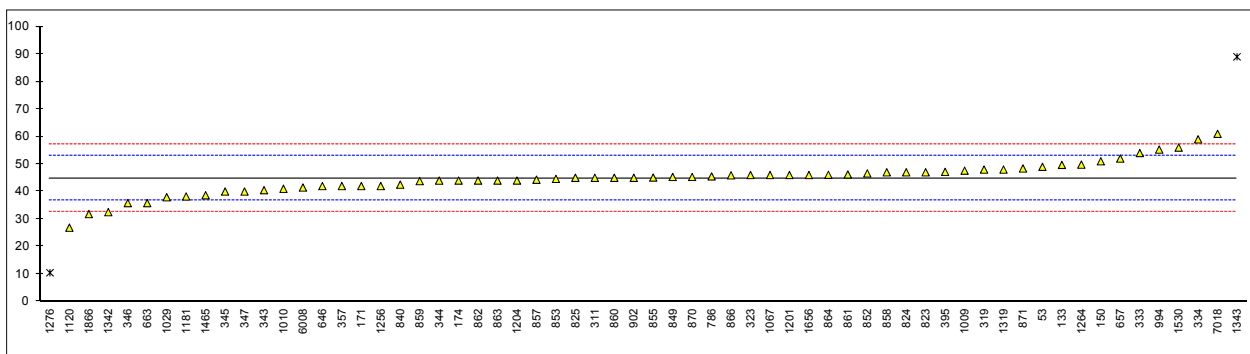
Determination of Toluene content on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53		-----		-----	
133	IMPCA001	31.3		0.40	
150	IMPCA001	32		0.64	
169		-----		-----	
171	IMPCA001	31.1		0.33	
174	IMPCA001	31		0.30	
311	IMPCA001	33		0.99	
316		-----		-----	
319	IMPCA001	32		0.64	
323	IMPCA001	28		-0.74	
333		-----		-----	
334	IMPCA001	21		-3.17	
335		-----		-----	
343	IMPCA001	31.03		0.31	
344	IMPCA001	29.44		-0.24	
345	IMPCA001	21.7		-2.92	
346	IMPCA001	29.2		-0.33	
347	IMPCA001	32		0.64	
357	IMPCA001	24		-2.13	
395	IMPCA001	29.77		-0.13	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609		-----		-----	
646	IMPCA001	26		-1.44	
657	IMPCA001	35		1.68	
663	IMPCA001	23.4		-2.34	
786	IMPCA001	36.3		2.13	
823	IMPCA001	32		0.64	
824	IMPCA001	32		0.64	
825	IMPCA001	32		0.64	
840	IMPCA001	27.8		-0.81	
849		30.4		0.09	
852	IMPCA001	31.7		0.54	
853	IMPCA001	30.3		0.05	
855	IMPCA001	31.8		0.57	
857	IMPCA001	30.6		0.16	
858	IMPCA001	32		0.64	
859	IMPCA001	32.9		0.95	
860	IMPCA001	32		0.64	
861	IMPCA001	33.8		1.27	
862	IMPCA001	31		0.30	
863	IMPCA001	31.3		0.40	
864	IMPCA001	29.1		-0.36	
866	IMPCA001	30.6		0.16	
870	IMPCA001	30.4		0.09	
871		30.0		-0.05	
902	IMPCA001	28		-0.74	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994	IMPCA001	28.65		-0.52	
997		-----		-----	
1009	IMPCA001	34.604		1.54	
1010	IMPCA001	36		2.03	
1029		-----		-----	
1041		-----		-----	
1067		-----		-----	
1120		-----		-----	
1149		-----		-----	
1181	IMPCA001	16.08920	R(0.05)	-4.87	
1201	IMPCA001	30		-0.05	
1204		-----		-----	
1221		-----		-----	
1246		-----		-----	
1256		-----		-----	
1264	IMPCA001	31.80		0.57	

1276	IMPCA001	9.5	C,R(0.01)	-7.15	first reported 0.00
1319	IMPCA001	35		1.68	
1342		<5		<-8.70	false negative test result?
1343		-----		-----	
1465	IMPCA001	23.79		-2.20	
1510		-----		-----	
1530	IMPCA001	104	R(0.01)	25.57	
1544		-----		-----	
1656		<10		<-6.97	false negative test result?
1866	IMPCA001	30.7		0.19	
6008	IMPCA001	26.644		-1.21	
7018	IMPCA001	23		-2.47	

normality	OK
n	49
outliers	3
mean (n)	30.145
st.dev. (n)	3.5033
R(calc.)	9.809
R(Horwitz)	8.088

Kernel Density
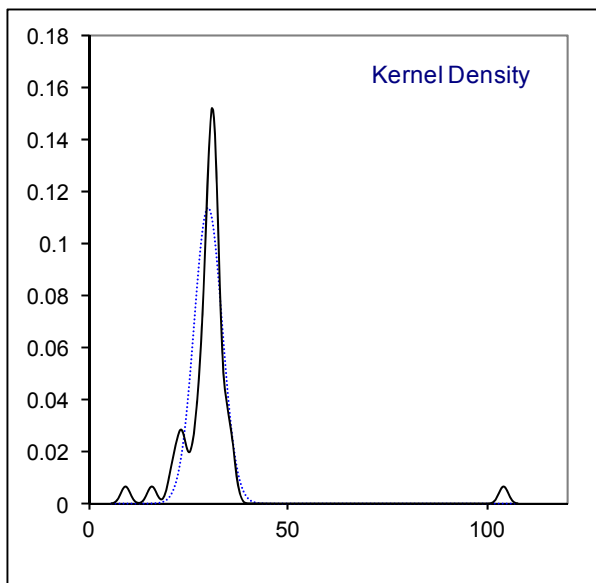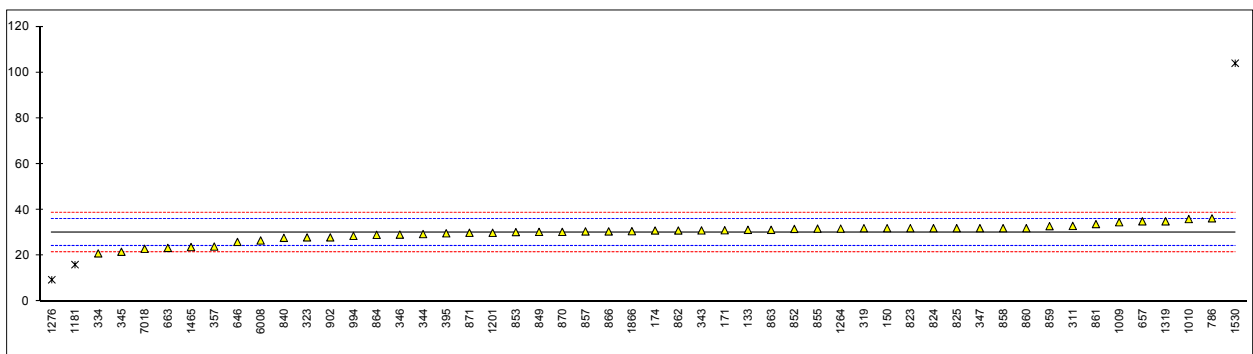
Determination of Sulphur on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53	D5453	<0.5		-----	
133	D5453	0		-----	
150	D5453	0.1		-----	
169		-----		-----	
171	D5453	<1		-----	
174	D5453	<1		-----	
311	D5453	<1.0		-----	
316		-----		-----	
319	D5453	<0.5		-----	
323	D5453	<1		-----	
333	D5453	<0.5		-----	
334	D5453	<0.5		-----	
335		-----		-----	
343	D5453	<1		-----	
344	D5453	<0.5		-----	
345	ISO20846	0		-----	
346		-----		-----	
347	D5453	<0.5		-----	
357	D5453	<0.5		-----	
395		-----		-----	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609	D5243	<1		-----	
646	D3961	<0.2		-----	
657	D5453	<1		-----	
663		-----		-----	
786	D5453	<1		-----	
823	D5453	0.10		-----	
824	D5453	<1.0		-----	
825	D5453	<1.0		-----	
840		-----		-----	
849		-----		-----	
852	D3961	0.17		-----	
853		-----		-----	
855	D5453	<0.5		-----	
857	D3961	<0.5		-----	
858	D3120	<1		-----	
859	D5453	<0.5		-----	
860	D3961	0.1		-----	
861	D5453	0.1		-----	
862	D5453	<0.5		-----	
863	D5453	0.1		-----	
864	D5453	<0.5		-----	
866		-----		-----	
870	D3961	<1		-----	
871		-----		-----	
902		-----		-----	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994	D5453	<1		-----	
997	D5453	<1		-----	
1009		-----		-----	
1010		-----		-----	
1029	D5453	<0.50		-----	
1041		-----		-----	
1067	D5453	0.3		-----	
1120		-----		-----	
1149		-----		-----	
1181	D5453	0.00		-----	
1201	D5453	0		-----	
1204		-----		-----	
1221		-----		-----	
1246		-----		-----	
1256		-----		-----	
1264	D5453	0.45		-----	

1276	D5453	0.22	-----
1319	D5453	<0.1	-----
1342	D5453	0.21	-----
1343	D5453	0.4	-----
1465	D5453	0.161	-----
1510		-----	-----
1530	D5453	0.26	-----
1544	D5453	0.3	-----
1656	D5453	<1	-----
1866		-----	-----
6008	D5453	0.106	-----
7018	D5453	<0.1	-----

| normality	n.a.
n	50
outliers	0
mean (n)	<1
st.dev. (n)	n.a.
R(calc.)	n.a.
R(D5453:12)	n.a.

Determination of Trimethylamine on sample #15160; results in µg/kg

lab	method	value	mark	z(targ)	remarks
53		-----		-----	
133		-----		-----	
150		-----		-----	
169		-----		-----	
171		-----		-----	
174		-----		-----	
311		-----		-----	
316	INH-018	37		0.45	
319		-----		-----	
323		-----		-----	
333		-----		-----	
334		-----		-----	
335		-----		-----	
343		-----		-----	
344		-----		-----	
345		-----		-----	
346		-----		-----	
347		-----		-----	
357		-----		-----	
395		-----		-----	
445		-----		-----	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609		-----		-----	
646		-----		-----	
657		-----		-----	
663		-----		-----	
786		-----		-----	
823		-----		-----	
824		-----		-----	
825		-----		-----	
840		-----		-----	
849		-----		-----	
852		-----		-----	
853		-----		-----	
855		-----		-----	
857		-----		-----	
858		-----		-----	
859	E346	36		0.24	
860		-----		-----	
861		-----		-----	
862	E346	32		-0.61	
863		-----		-----	
864		-----		-----	
866		-----		-----	
870		-----		-----	
871		-----		-----	
902		-----		-----	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974		-----		-----	
994		-----		-----	
997		-----		-----	
1009	E346	48.63		2.92	
1010		-----		-----	
1029	E346	36.25		0.29	
1041		-----		-----	
1067		-----		-----	
1120		-----		-----	
1149		-----		-----	
1181		-----		-----	
1201		-----		-----	
1204		-----		-----	
1221		-----		-----	
1246		-----		-----	
1256		-----		-----	
1264		-----		-----	

1276		-----		-----
1319	E346	206	C,G(0.01)	36.33
1342		-----		-----
1343		-----		-----
1465		-----		-----
1510		-----		-----
1530		-----		-----
1544		-----		-----
1656		-----		-----
1866		-----		-----
6008	E346	36.33		0.31
7018	E346	18		-3.59

normality	unknown		
n	7		
outliers	1	Spike	
mean (n)	34.89	40.13	< 87% recovery
st.dev. (n)	9.056		
R(calc.)	25.36		
R(E346:08e1)*	13.19		Compare R(Horwitz) = 25.90

*= estimated reproducibility based on repeatability data of ASTM E346:08e1
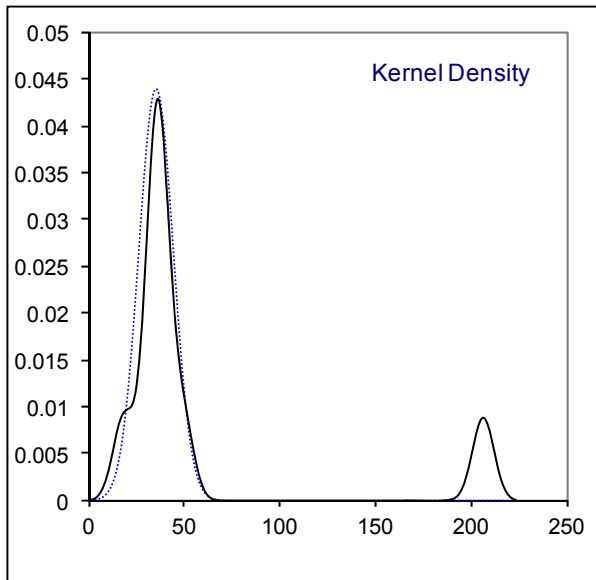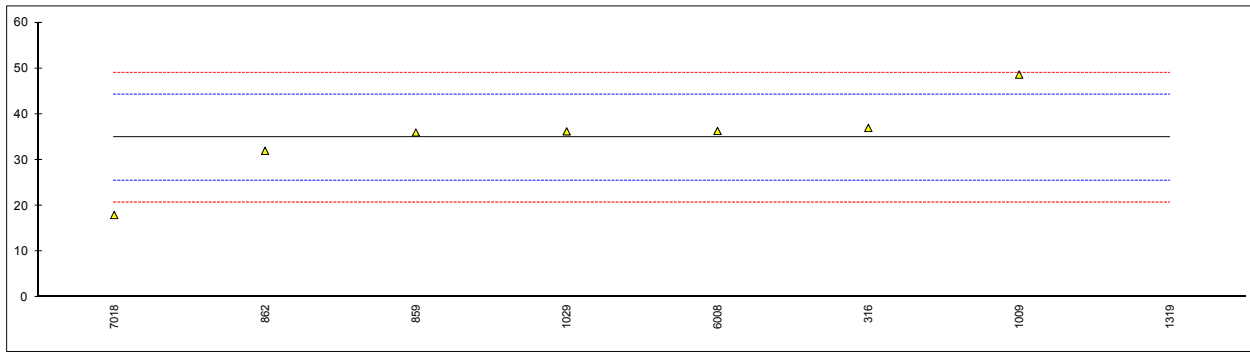
Determination of Water, Coulometric KF titration on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53	E1064	840.4		-0.77	
133	E1064	1122	C,R(0.01)	4.46	reported 0.1122 mg/kg, probably a unit error
150		-----		-----	
169	E1064	860		-0.40	
171	E1064	862.65		-0.35	
174	E1064	970		1.64	
311	E1064	910		0.53	
316		-----		-----	
319	E1064	856.0	C	-0.48	first reported 0.086
323	E1064	850		-0.59	
333	E1064	890		0.15	
334	E1064	881		-0.01	
335	E1064	857		-0.46	
343	E1064	859		-0.42	
344	E1064	862.0		-0.37	
345	E1064	842.09		-0.74	
346	E1064	874		-0.14	
347	E1064	830		-0.96	
357	E1064	880		-0.03	
395	E1064	941.23		1.11	
445	E1064	848		-0.63	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608		-----		-----	
609	E1064	863.43		-0.34	
646	E1064	880		-0.03	
657	E1064	890		0.15	
663	E1064	846.0		-0.66	
786	E1064	845		-0.68	
823	E1064	856		-0.48	
824	D6304	871		-0.20	
825	E1064	870		-0.22	
840	E1064	911		0.54	
849	E1064	876		-0.11	
852	E1064	877		-0.09	
853	E1064	864		-0.33	
855	E1064	871		-0.20	
857	E1064	873		-0.16	
858	E1064	865		-0.31	
859	E1064	867		-0.27	
860	E1064	866		-0.29	
861	E1064	836		-0.85	
862	E1064	888		0.12	
863	E1064	868		-0.25	
864	E1064	890		0.15	
866	E1064	861		-0.38	
870	E1064	880		-0.03	
871	E1064	868		-0.25	
902	E1064	878.5		-0.06	
912		-----		-----	
913		-----		-----	
963		-----		-----	
974	E1064	835		-0.87	
994	E1064	921		0.73	
997	D6304	910		0.53	
1009	E1064	919.43		0.70	
1010	E1064	850		-0.59	
1029	E1064	888		0.12	
1041		-----		-----	
1067	E1064	934		0.97	
1120		-----		-----	
1149		-----		-----	
1181	E1064	88	R(0.01)	-14.74	
1201	E1064	870		-0.22	
1204	E1064	917		0.66	
1221		-----		-----	
1246		-----		-----	
1256		-----		-----	
1264	E1064	932		0.93	

1276	E1064	775		-1.98	
1319	E1064	936		1.01	
1342	E1064	950		1.27	
1343	E1064	895.8		0.26	
1465	E1064	845	C	-0.68	first reported 0.0845 mg/kg
1510		-----		-----	
1530		-----		-----	
1544		-----		-----	
1656	E1064	1000		2.20	
1866	E1064	1039	R(0.05)	2.92	
6008	E1064	988		1.97	
7018	E1064	942.8		1.13	

|	
normality	suspect
n	61
outliers	3
mean (n)	881.694
st.dev. (n)	39.9363
R(calc.)	111.822
R(E1064:12)	150.770

Kernel Density
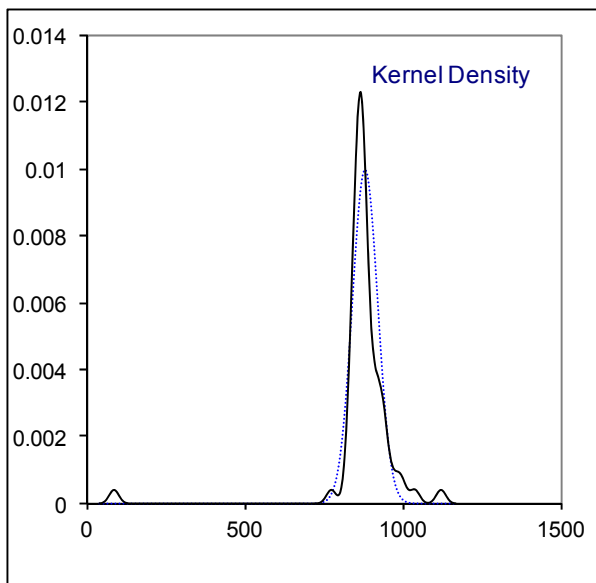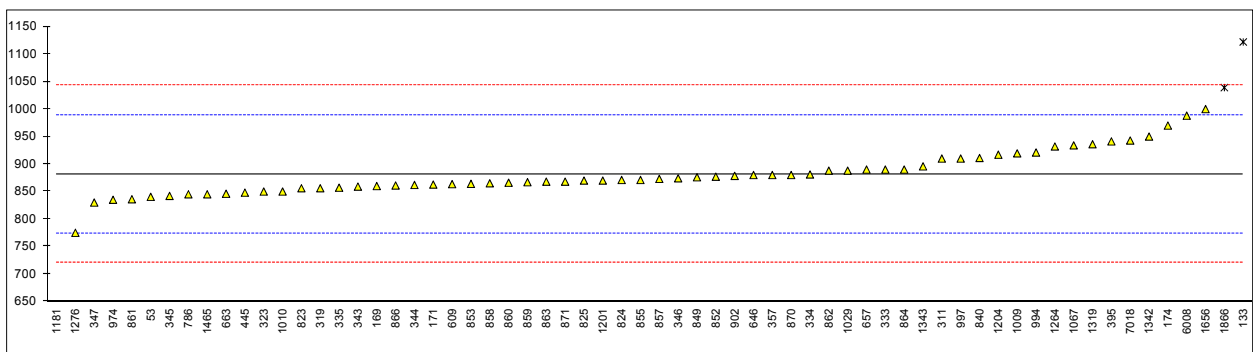
Determination of Water, Titrimetric on sample #15160; results in mg/kg

lab	method	value	mark	z(targ)	remarks
53		-----		-----	
133		-----		-----	
150		-----		-----	
169	E203	916		0.13	
171		-----		-----	
174	E203	990		0.90	
311	E203	910		0.07	
316		-----		-----	
319		-----		-----	
323	E203	851		-0.54	
333		-----		-----	
334		-----		-----	
335		-----		-----	
343	E203	870		-0.34	
344		-----		-----	
345	E203	849.62		-0.55	
346		-----		-----	
347	E203	830		-0.76	
357		-----		-----	
395		-----		-----	
445	E203	946		0.45	
463		-----		-----	
528		-----		-----	
529		-----		-----	
551		-----		-----	
554		-----		-----	
557		-----		-----	
608	E203	952		0.51	
609		-----		-----	
646		-----		-----	
657	E203	870		-0.34	
663	E203	869.5		-0.35	
786		-----		-----	
823	E203	857		-0.48	
824	E203	874		-0.30	
825	E203	875		-0.29	
840	E203	1025		1.26	
849		-----		-----	
852		-----		-----	
853	E203	869		-0.35	
855	E203	880		-0.24	
857	E203	881		-0.23	
858	E203	874		-0.30	
859	E203	884		-0.20	
860		875		-0.29	
861		-----		-----	
862	E203	889		-0.15	
863		-----		-----	
864	E203	880		-0.24	
866	E203	864		-0.40	
870	E203	880		-0.24	
871		-----		-----	
902	E203	888		-0.16	
912	E203	1001		1.02	
913	E203	1000		1.01	
963		-----		-----	
974		-----		-----	
994		-----		-----	
997		-----		-----	
1009		-----		-----	
1010		-----		-----	
1029		-----		-----	
1041		-----		-----	
1067		-----		-----	
1120	E1364	1073		1.76	
1149		-----		-----	
1181		-----		-----	
1201	E203	905		0.02	
1204		-----		-----	
1221		-----		-----	
1246		-----		-----	
1256	E203	830		-0.76	
1264		-----		-----	

1276		-----		-----
1319	E203	942		0.40
1342		-----		-----
1343		-----		-----
1465		-----		-----
1510		-----		-----
1530	E203	3591	R(0.01)	27.88
1544		-----		-----
1656	E203	900		-0.03
1866		-----		-----
6008		-----		-----
7018		-----		-----

normality	not OK
n	33
outliers	1
mean (n)	903.034
st.dev. (n)	57.7645
R(calc.)	161.710
R(E203:08)	270.000

Kernel Density
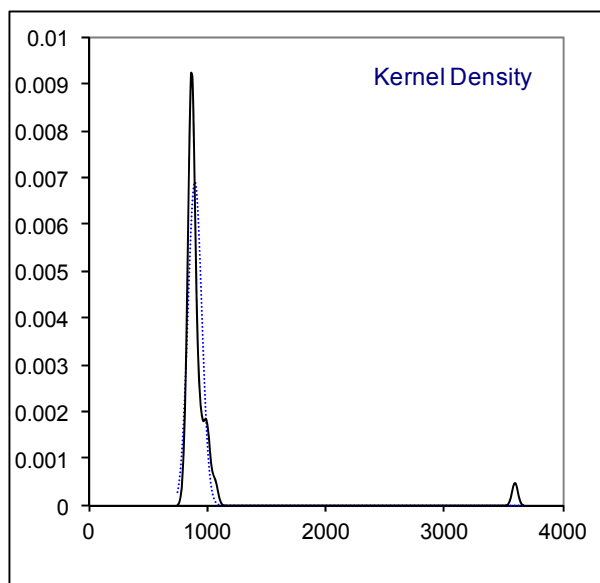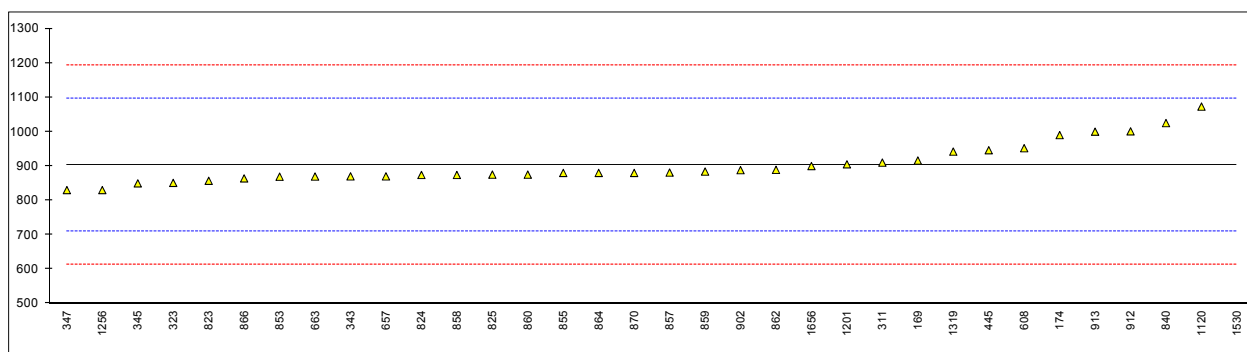
Determination of UV Absorbance (50 mm cuvette) on sample #15161

lab	method	300nm	268.5nm	250nm	240nm	230nm	220nm	Pass/Fail
150	IMPCA004	0.026	0.254	0.198	-----	-----	2.308	Fail
169		-----	-----	-----	-----	-----	-----	-----
171		-----	-----	-----	-----	-----	-----	Fail
311	IMPCA004	0.017	0.256	0.181	0.275	0.583	>2.000	Fail
319	IMPCA004	0.023	0.233	0.190	0.287	0.600	2.495	Fail
323	IMPCA004	0.022	0.244	0.187	0.288	0.618	>2.0	Fail
343	IMPCA004	0.023	0.249	0.195	-----	-----	2.780	Fail
346	IMPCA004	0.244	0.256	0.193	-----	-----	2.913	Fail
347	IMPCA004	0.017	0.238	0.177	0.270	0.579	2.819	Fail
357	IMPCA004	0.020	0.255	0.180	0.265	**0.057**	2.753	Fail
395		-----	-----	-----	-----	-----	-----	Fail
463		-----	-----	-----	-----	-----	-----	-----
528		-----	-----	-----	-----	-----	-----	-----
529		-----	-----	-----	-----	-----	-----	-----
551		-----	-----	-----	-----	-----	-----	-----
554		-----	-----	-----	-----	-----	-----	-----
657		-----	-----	-----	-----	-----	-----	-----
663	IMPCA004	0.0181	0.2590	0.1796	-----	-----	2.3984	Fail
823	IMPCA004	0.025	0.259	0.190	0.281	0.588	2.408	Fail
824		-----	-----	-----	-----	-----	-----	-----
825		-----	-----	-----	-----	-----	-----	-----
849	IMPCA004	0.018	0.246	0.184	0.267	0.565	2.714	Fail
852	IMPCA004	0.023	0.271	0.195	0.275	0.559	2.877	Fail
853	IMPCA004	0.022	0.258	0.191	0.276	0.577	2.781	Fail
855	IMPCA004	0.024	0.258	0.191	0.269	0.565	2.789	Fail
857	IMPCA004	0.022	0.256	0.187	0.274	0.567	2.946	Fail
858	IMPCA004	0.023	0.278	0.186	0.268	0.576	2.790	Fail
859	IMPCA004	0.023	0.258	0.191	0.277	0.582	3.104	Fail
860	IMPCA004	0.024	0.253	0.190	0.275	0.569	2.812	Fail
861	IMPCA004	0.012	0.228	**0.156**	**0.230**	0.497	2.205	Fail
862	IMPCA004	0.025	0.250	0.190	0.272	0.555	2.582	Fail
863	IMPCA004	0.023	0.247	0.185	0.266	0.536	2.247	Fail
864	IMPCA004	0.024	0.256	0.190	0.268	0.564	2.781	Fail
866	IMPCA004	0.019	0.252	0.186	0.274	0.577	2.120	Fail
870	IMPCA004	0.022	0.258	0.190	0.272	0.577	2.765	Fail
871	IMPCA004	0.020	0.262	0.184	0.265	0.558	2.927	Fail
902		-----	-----	-----	-----	-----	-----	-----
913		-----	-----	-----	-----	-----	-----	-----
963		-----	-----	-----	-----	-----	-----	-----
974		-----	-----	-----	-----	-----	-----	-----
994		-----	-----	-----	-----	-----	-----	-----
1041		-----	-----	-----	-----	-----	-----	-----
1067	IMPCA004	0.0231	0.2720	0.1961	0.290	0.6121	2.994	Fail
1149		-----	-----	-----	-----	-----	-----	-----
1181		-----	-----	-----	-----	-----	-----	-----
1201	IMPCA004	0.010	0.240	0.173	0.261	0.573	2.833	Fail
1264		-----	-----	-----	-----	-----	-----	-----
1319	IMPCA004	0.022	0.258	0.183	0.268	0.553	2.731	Fail
1342	IMPCA004	0.014 ex	**0.185**	**0.158**	0.248 ex	**0.435**	2.337 ex	Fail
1343		-----	-----	-----	-----	-----	-----	-----
1510		-----	-----	-----	-----	-----	-----	-----
7018		-----	-----	-----	-----	-----	-----	-----
	normality	not OK	OK	OK	OK	not OK	OK	
	n	27	28	27	23	23	26	29
	outliers	1 (+1ex)	1	2	1 + 1 excl.	2	0 + 1 excl.	
	mean (n)	0.0211	0.2537	0.1875	0.2732	0.5709	2.6874	Fail
	st.dev. (n)	0.00379	0.01093	0.00601	0.00760	0.02452	0.26037	
	R(calc.)	0.0106	0.0306	0.0168	0.0213	0.0687	0.7290	
	R(IMPCA004:08)	0.0317	0.0688	0.0189	unknown	unknown	0.7676	

bold and underlined **figures** are statistical outliers

UV 300 nm

Kernel Density

UV 268.5 nm

Kernel Density

UV 250 nm

Kernel Density

UV 240 nm

Kernel Density

UV 230 nm

Kernel Density

UV 220 nm

Kernel Density
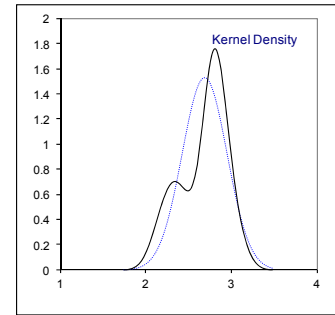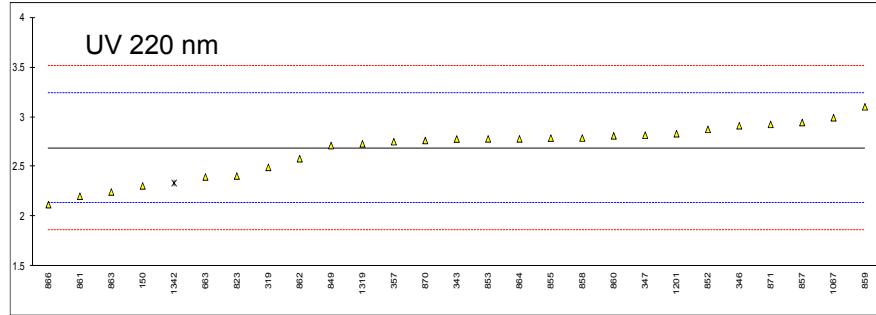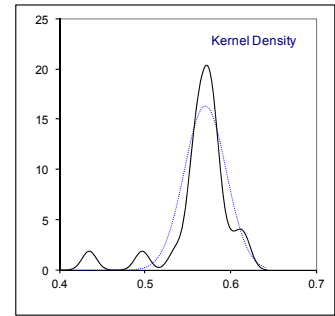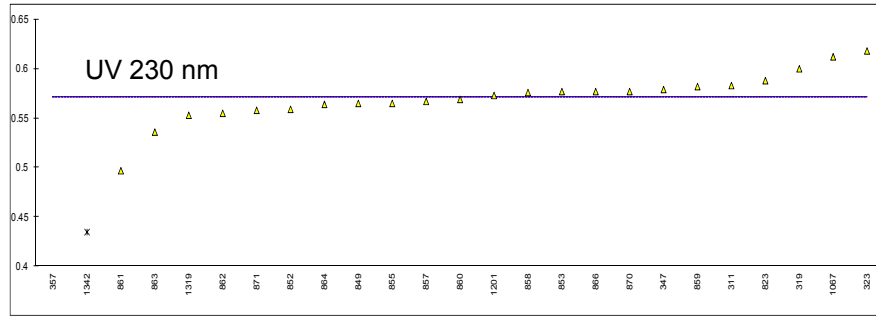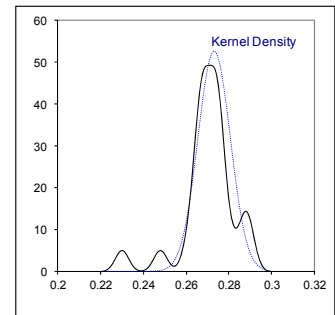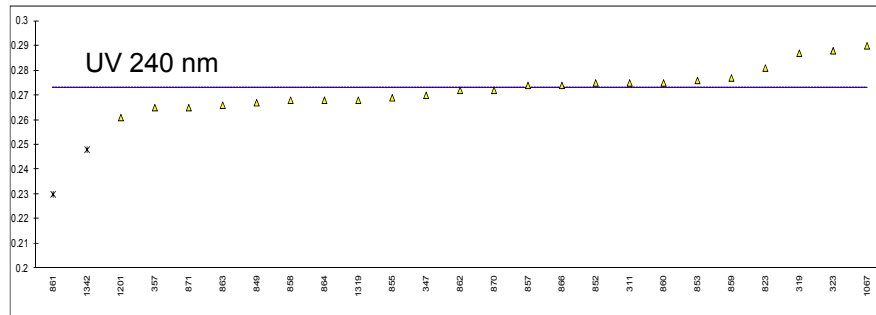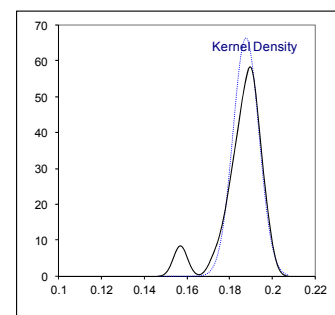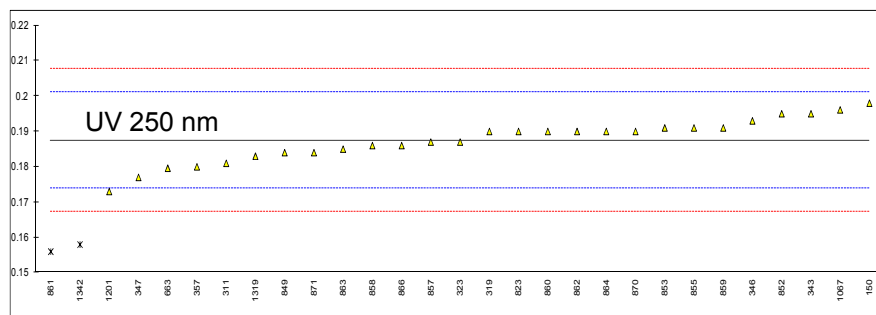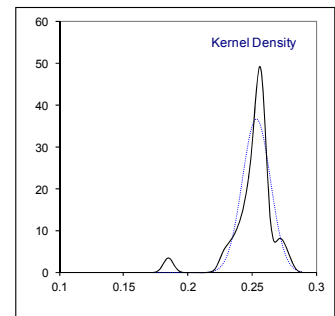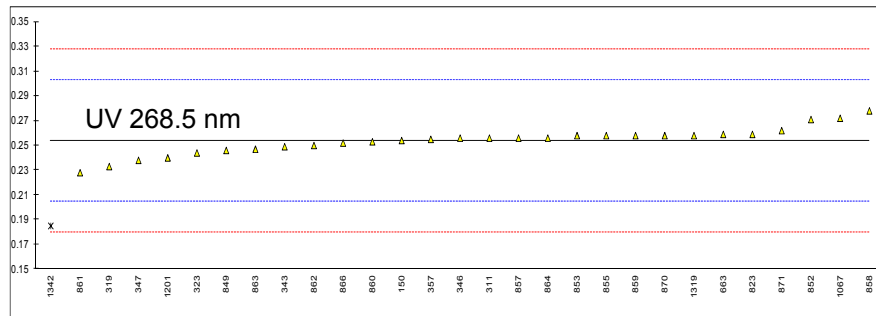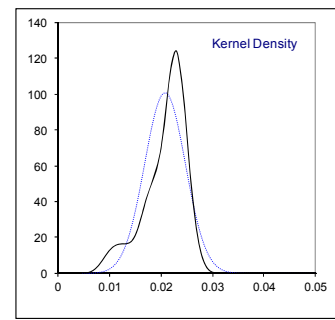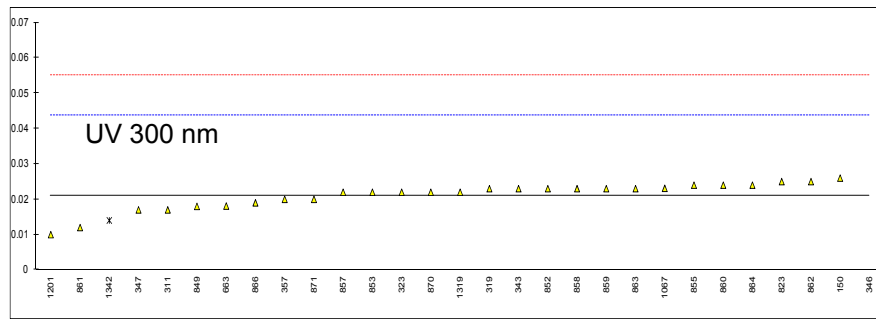
Determination of UV Absorbance (10 mm cuvette) on sample #15161

lab	method	300nm	268.5nm	250nm	240nm	230nm	220nm	Pass/Fail
150		-----	-----	-----	-----	-----	-----	
169		-----	-----	-----	-----	-----	-----	
171	IMPCA004	<0.000	0.021	0.004	**0.025**	0.095	0.667	Fail
311		-----	-----	-----	-----	-----	-----	
319		-----	-----	-----	-----	-----	-----	
323		-----	-----	-----	-----	-----	-----	
343		-----	-----	-----	-----	-----	-----	
346		-----	-----	-----	-----	-----	-----	
347		-----	-----	-----	-----	-----	-----	
357		-----	-----	-----	-----	-----	-----	
395	IMPCA004	0.0054	-----	0.0354	0.0529	0.1121	-----	Fail
463		-----	-----	-----	-----	-----	-----	
528		-----	-----	-----	-----	-----	-----	
529		-----	-----	-----	-----	-----	-----	
551		-----	-----	-----	-----	-----	-----	
554		-----	-----	-----	-----	-----	-----	
657	IMPCA004	0.004	0.053	0.039	0.053	0.115	0.691	Fail
663		-----	-----	-----	-----	-----	-----	
823		-----	-----	-----	-----	-----	-----	
824	IMPCA004	0.0025	0.0504	0.0340	0.0514	0.1111	0.6718	Fail
825	IMPCA004	0.013	0.062	0.049	0.068	0.131	0.697	Fail
849		-----	-----	-----	-----	-----	-----	
852		-----	-----	-----	-----	-----	-----	
853		-----	-----	-----	-----	-----	-----	
855		-----	-----	-----	-----	-----	-----	
857		-----	-----	-----	-----	-----	-----	
858		-----	-----	-----	-----	-----	-----	
859		-----	-----	-----	-----	-----	-----	
860		-----	-----	-----	-----	-----	-----	
861		-----	-----	-----	-----	-----	-----	
862		-----	-----	-----	-----	-----	-----	
863		-----	-----	-----	-----	-----	-----	
864		-----	-----	-----	-----	-----	-----	
866		-----	-----	-----	-----	-----	-----	
870		-----	-----	-----	-----	-----	-----	
871		-----	-----	-----	-----	-----	-----	
902		-----	-----	-----	-----	-----	-----	
913		-----	-----	-----	-----	-----	-----	
963		-----	-----	-----	-----	-----	-----	
974		-----	-----	-----	-----	-----	-----	
994		-----	-----	-----	-----	-----	-----	
1041		-----	-----	-----	-----	-----	-----	
1067		-----	-----	-----	-----	-----	-----	
1149		-----	-----	-----	-----	-----	-----	
1181	IMPCA004	**0.2737**	**0.2821**	**0.2831**	-----	-----	**0.2861**	
1201		-----	-----	-----	-----	-----	-----	
1264	IMPCA004	0.005	0.048	0.039	0.050	0.108	0.628	Fail
1319		-----	-----	-----	-----	-----	-----	
1342		-----	-----	-----	-----	-----	-----	
1343		-----	-----	-----	-----	-----	-----	
1510		-----	-----	-----	-----	-----	-----	
7018	IMPCA004	0.005	0.051	0.036	0.056	0.110	0.668	Fail
	normality	unknown	unknown	unknown	unknown	unknown	unknown	
	n	6	6	7	6	7	6	7
	outliers	1	1	1	1	0	1	
	mean (n)	0.0058	0.0476	0.0338	0.0552	0.1117	0.6705	Fail
	st.dev. (n)	0.00367	0.01388	0.01403	0.00657	0.01064	0.02429	
	R(calc.)	0.0103	0.0389	0.0393	0.0184	0.0298	0.0680	
	R(IMPCA004:08)	0.0087	0.0129	0.0034	unknown	unknown	0.1924	

bold and underlined **figures** are statistical outliers

z-scores UV absorbance

	50mm Cuvette						10mm Cuvette					
lab	300nm	268.5nm	250nm	240nm	230nm	220nm	300nm	268.5nm	250nm	240nm	230nm	220nm
150	0.43	0.01	1.55	-----	-----	-1.38	-----	-----	-----	-----	-----	-----
169	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
171	-----	-----	-----	-----	-----	-----	-----	-5.77	-24.44	-----	-----	-0.05
311	-0.36	0.09	-0.96	-----	-----	-----	-----	-----	-----	-----	-----	-----
319	0.17	-0.84	0.37	-----	-----	-0.70	-----	-----	-----	-----	-----	-----
323	0.08	-0.40	-0.08	-----	-----	-----	-----	-----	-----	-----	-----	-----
343	0.17	-0.19	1.11	-----	-----	0.34	-----	-----	-----	-----	-----	-----
346	19.70	0.09	0.81	-----	-----	0.82	-----	-----	-----	-----	-----	-----
347	-0.36	-0.64	-1.55	-----	-----	0.48	-----	-----	-----	-----	-----	-----
357	-0.10	0.05	-1.11	-----	-----	0.24	-----	-----	-----	-----	-----	-----
395	-----	-----	-----	-----	-----	-----	-0.13	-----	1.34	-----	-----	-----
463	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
528	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
529	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
551	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
554	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
657	-----	-----	-----	-----	-----	-----	-0.58	1.18	4.29	-----	-----	0.30
663	-0.27	0.22	-1.17	-----	-----	-1.05	-----	-----	-----	-----	-----	-----
823	0.34	0.22	0.37	-----	-----	-1.01	-----	-----	-----	-----	-----	-----
824	-----	-----	-----	-----	-----	-----	-1.06	0.62	0.19	-----	-----	0.02
825	-----	-----	-----	-----	-----	-----	2.31	3.14	12.50	-----	-----	0.39
849	-0.28	-0.31	-0.52	-----	-----	0.10	-----	-----	-----	-----	-----	-----
852	0.17	0.70	1.11	-----	-----	0.69	-----	-----	-----	-----	-----	-----
853	0.08	0.17	0.52	-----	-----	0.34	-----	-----	-----	-----	-----	-----
855	0.25	0.17	0.52	-----	-----	0.37	-----	-----	-----	-----	-----	-----
857	0.08	0.09	-0.08	-----	-----	0.94	-----	-----	-----	-----	-----	-----
858	0.17	0.99	-0.22	-----	-----	0.37	-----	-----	-----	-----	-----	-----
859	0.17	0.17	0.52	-----	-----	1.51	-----	-----	-----	-----	-----	-----
860	0.25	-0.03	0.37	-----	-----	0.45	-----	-----	-----	-----	-----	-----
861	-0.81	-1.05	-4.66	-----	-----	-1.75	-----	-----	-----	-----	-----	-----
862	0.34	-0.15	0.37	-----	-----	-0.38	-----	-----	-----	-----	-----	-----
863	0.17	-0.27	-0.37	-----	-----	-1.60	-----	-----	-----	-----	-----	-----
864	0.25	0.09	0.37	-----	-----	0.34	-----	-----	-----	-----	-----	-----
866	-0.19	-0.07	-0.22	-----	-----	-2.06	-----	-----	-----	-----	-----	-----
870	0.08	0.17	0.37	-----	-----	0.28	-----	-----	-----	-----	-----	-----
871	-0.10	0.34	-0.52	-----	-----	0.87	-----	-----	-----	-----	-----	-----
902	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
913	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
963	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
974	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
994	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1041	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1067	0.18	0.74	1.27	-----	-----	1.11	-----	-----	-----	-----	-----	-----
1149	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1181	-----	-----	-----	-----	-----	-----	85.97	50.94	204.67	-----	-----	-5.59
1201	-0.98	-0.56	-2.14	-----	-----	0.53	-----	-----	-----	-----	-----	-----
1264	-----	-----	-----	-----	-----	-----	-0.26	0.09	4.29	-----	-----	-0.62
1319	0.08	0.17	-0.67	-----	-----	0.16	-----	-----	-----	-----	-----	-----
1342	-0.63	-2.80	-4.36	-----	-----	-1.27	-----	-----	-----	-----	-----	-----
1343	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1510	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7018	-----	-----	-----	-----	-----	-----	-0.26	0.75	1.83	-----	-----	-0.04

APPENDIX 2

Number of participants per country

    1 lab in AZERBAIJAN

    1 lab in BELGIUM

   3 labs in BRAZIL

    1 lab in BULGARIA

   3 labs in CANADA

 16 labs in CHINA, People's Republic

    1 lab in FINLAND

   3 labs in FRANCE

    1 lab in GEORGIA

   2 labs in GERMANY

   2 labs in INDIA

    1 lab in IRAN, Islamic Republic of

    1 lab in ITALY

    1 lab in JAPAN

   3 labs in MALAYSIA

   2 labs in MEXICO

   5 labs in NETHERLANDS

   2 labs in NEW ZEALAND

    1 lab in NORWAY

    1 lab in RUSSIAN FEDERATION

   4 labs in SAUDI ARABIA

   2 labs in SINGAPORE

   3 labs in SOUTH KOREA

   5 labs in SPAIN

    1 lab in SWEDEN

    1 lab in THAILAND

   2 labs in TURKEY

   2 labs in UNITED ARAB EMIRATES

   3 labs in UNITED KINGDOM

   9 labs in UNITED STATES OF AMERICA

   2 labs in VENEZUELA

    1 lab in VIETNAM

APPENDIX 3

Abbreviations:

C   = final result after checking of first reported suspect result
D(0.01) = outlier in Dixon's outlier test
D(0.05) = straggler in Dixon's outlier test
G(0.01) = outlier in Grubbs' outlier test
G(0.05) = straggler in Grubbs' outlier test
DG(0.01) = outlier in Double Grubbs' outlier test
DG(0.05) = straggler in Double Grubbs' outlier test
R(0.01) = outlier in Rosner outlier test
R(0.05) = straggler in Rosner outlier test
E   = error in calculations
U   = reported in different unit
ex   = excluded from calculations
n.a.   = not applicable
W   = result withdrawn on request of participant

Literature:

1   iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, April 2014
2   ASTM E178-02
3   ASTM E1301-03
4   ISO 5725-86
5   ISO 5725, parts 1-6, 1994
6   ISO 13528-05,
7   M. Thompson and R. Wood, J. AOAC Int, <u>76</u>, 926, (1993)
8   W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
9   IP 367/96
10   DIN 38402 T41/42
11   P.L. Davies, Fr. Z. Anal. Chem, <u>331</u>, 513, (1988)
12   J.N. Miller, Analyst, <u>118</u>, 455, (1993)
13   IMPCA Methanol Reference Specifications, IMPCA, Brussels, February 2014.
14   ASTM E346-03e1
15   Analytical Methods Committee Technical brief, No4 January 2001.
16   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/).
17   Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, *Technometrics*, 25(2), pp. 165-172, (1983)