Results of Proficiency Test
Hydraulic Fluid (used)
November 2016

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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1 INTRODUCTION

Since 2003, the Institute for Interlaboratory Studies organized a proficiency test for the analysis of used Hydraulic Fluid every year. It was decided to continue this interlaboratory study during the annual program 2016/2017. In this interlaboratory study, 57 laboratories from 40 different countries did register for participation. See appendix 2 for the number of participants per country. In this report, the test results of the 2016 interlaboratory study on used Hydraulic Fluid are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test. Sample analysis for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. It was decided to send two different samples of used fluids: one sample of 1 litre used Hydraulic Fluid, labelled #16241, and one sample of 0.1 litre used Hydraulic Fluid, labelled #16242, especially for wear metals.
The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 QUALITY SYSTEM

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, has implemented a quality system based on ISO/IEC 17043:2010 (R007). This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organization, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3). This protocol is electronically available through the iis website 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 bulk material of used Hydraulic Fluid was obtained from a local supplier. The approximately 100 litre of the bulk material was homogenised in a precleaned drum. After homogenisation, 83 amber glass one litre bottles were filled and labelled #16241. The homogeneity of the subsamples #16241 was checked by determination of Density at 15°C in accordance with ASTM D4052 and Viscosity at 40°C according to ASTM D445 on 8 stratified randomly selected samples.

	Density at 15 °C in kg/L	*Viscosity at 40 °C in mm^2/s*
Sample #16241-1	0.87431	39.92
Sample #16241-2	0.87431	39.90
Sample #16241-3	0.87430	39.85
Sample #16241-4	0.87430	39.93
Sample #16241-5	0.87430	39.94
Sample #16241-6	0.87430	39.92
Sample #16241-7	0.87430	39.93
Sample #16241-8	0.87430	39.93

Table 1: homogeneity test results of subsamples #16241

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

	Density at 15 °C in kg/L	*Viscosity at 40 °C in mm^2/s*
r (observed)	0.00001	0.08
reference test method	ISO12185:96	iis, see ref. 17
0.3 * R (ref. test method)	0.00015	0.22

Table 2: repeatabilities of subsamples #16241

The calculated repeatabilities in table 2 was less than 0.3 times the corresponding reproducibilities of the reference test methods. Therefore, homogeneity of the subsamples #16241 was assumed.

Approximately 10 litres were taken from the same bulk material for the preparation of wear metals sub PT samples. This bulk material was spiked with 100g Conostan S-21 and homogenised. After the homogenisation 83 HDPE containers of 100mL were filled and labelled #16242. The homogeneity of the subsamples #16242 was checked by determination of Density in accordance with ASTM D4052 and Phosphorus in accordance with ASTM D5185 on 7 stratified randomly selected samples.

	Density at 15 °C in kg/L	*Phosphorus in mg/kg*
Sample #16242-1	0.87477	339
Sample #16242-2	0.87476	355
Sample #16242-3	0.87474	332
Sample #16242-4	0.87476	373
Sample #16242-5	0.87476	374
Sample #16242-6	0.87476	346
Sample #16242-7	0.87476	347

Table 3: homogeneity test results of subsamples #16242

From the test results of table 3, the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities of the reference test methods in agreement with the procedure of ISO 13528, Annex B2 in the next table:

	Density at 15 °C in kg/L	*Phosphorus in mg/kg*
r (observed)	0.00003	45
reference test method	ISO12185:96	D5185:13e1
0.3* R (ref. test method)	0.00015	24
r (ref.test method)	n.a.	39

Table 4: repeatability of subsamples #16242

The calculated repeatability of the Density determination was less than 0.3 times the corresponding reproducibility of the reference test method. The calculated repeatability of the Phosphorus determination was almost equal to the corresponding repeatability of the reference test method. Therefore, homogeneity of the subsamples #16242 was assumed.

To each of the participating laboratories one 1 litre amber glass bottle, labelled #16241 and one 100 mL HDPE container, labelled #16242 was dispatched on October 26, 2016.

2.5 STABILITY OF THE SAMPLES

The stability of Hydraulic Fluid, packed in the brown glass bottles or in HDPE containers, was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYSES

The participants were asked to determine on sample #16241: Total Acid Number, Density at 15°C, Flash Point PMcc, Kinematic Viscosity at 40°C and at 100°C, Viscosity Stabinger at 40°C and at 100°C, Sulphur, Water content by KF and Level of Contamination and to determine on sample #16242: 20 elements (17 wear metals and 3 additives).

It was explicitly requested to treat the samples as if they were routine samples and to report the test results using the indicated units on the report form and not to round the test results more, but report as much significant figures as possible. It was also requested not to report 'less than' test results, which are above the detection limit, because such test results cannot be used for meaningful statistical calculations.

To get comparable test results a detailed report form, on which the units were prescribed as well as the required reference test methods and a letter of instructions were prepared and made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The laboratories were also requested to confirm the sample receipt on the same data entry portal. A SDS was added to the sample.

3 RESULTS

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

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

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3).
For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

First, the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test a variant of the Kolmogorov-Smirnov test and by the calculation of skewness and kurtosis. Evaluation of the three normality indicators in combination with the visual evaluation of the graphic Kernel density plot, lead to judgement of the normality being either 'unknown', 'OK', 'suspect' or 'not OK'. After removal of outliers, this check was repeated. Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the test results should be used with due care.
According to ISO 5725 the original test results per determination were submitted to Dixon's, Grubbs' and/or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are

marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

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

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported test results are plotted. The corresponding laboratory numbers are on the X-axis. The straight horizontal line presents the consensus value (a trimmed mean). The four striped lines, parallel to the consensus value line, are the +3s, +2s, -2s and -3s target reproducibility limits of the selected reference test method. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, e.g. ASTM, EN or ISO reproducibilities, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation of this interlaboratory study. The target standard deviation was calculated from the literature reproducibility by division with 2.8.
When a laboratory did use a test method with a reproducibility that is significantly different from the reproducibility of the reference test method used in this report, it is strongly advised to recalculate the z-score, while using the reproducibility of the actual test method used, this in order to evaluate whether the reported test result is fit-for-use.

The z-scores were calculated according to:

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

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

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

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

4 EVALUATION

In this proficiency test some problems were encountered during dispatch to Algeria, Brazil, Saudi Arabia and Egypt. One laboratory reported the test results after the final reporting date and six other laboratories did not report any test results at all. Not all laboratories were able to report all analyses requested.
The 51 reporting participants sent in 1168 numerical test results. Observed were 29 outlying test results, which is 2.5% of the numerical test 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 test. The different test methods that are reported by the laboratories are taken into account for explaining the observed differences when possible and applicable. These test methods are also mentioned in the tables in appendix 1 together with the original data. The abbreviations used in these tables are listed in appendix 3.

In the iis PT reports, test methods are referred to with a number (e.g. D664-A) and an added designation for the year that the test method was adopted or revised (e.g. D664-A:11ae1). If applicable, a designation in parentheses is added to designate the year of reapproval (e.g. Dxxxx:yy(2016)). In the tables of Appendix 1 only the test 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.

One should be aware that the sample “metals only” (#16242) contained a large number of elements, spectral interferences might explain part of the variation found for some elements.

Acid Number (Total): This determination was not problematic. No statistical outliers were observed. One test result was excluded as the reported test method is not suitable for this determination. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D664:11ae1.

Density at 15°C: 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 ISO12185:96.

Flash Point PMcc: This determination may be problematic. Two statistical outliers were observed and two other test results were excluded. However, the calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ASTM D93:16a method B, but it is with the requirements of ASTM D93:16a method A.

Kin.Visco.at 40°C: Regretfully a reproducibility for used oils is not present in ASTM D445:15a (see §17 of D445). Therefore, the target reproducibility is calculated from the reproducibilities found in iis PT's on used oils (see appendix 3, ref. 17). This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the average reproducibility found for used oils in previous iis PTs (to 2015). The requirements of ASTM D445:15a based on formulated oil which was used in the past is too strict.

Kin.Visco.at 100°C: see explanation about selected reproducibility target at Kin.Visco.at 40°C This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the average reproducibility found for used oils in previous iis PTs (to 2015). The requirements of ASTM D445:15a based on formulated oil which was used in the past is much too strict.

Visco. Stabinger at 40°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D7042:16e2.

Visco. Stabinger at 100°C: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D7042:16e2.

Sulphur: This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the requirements of ASTM D4294:10.

Water: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D6304:16e1.

Level of Contamination: This determination was very problematic. In total ten statistical outliers were observed over six parameters (3 counts per ml and 3 scale number). None of the calculated reproducibilities after rejection of the statistical outliers is in agreement with the requirements of ASTM D7647:10.

Aluminium: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D5185:13e1.

Barium: Although the consensus value of the group (10.8 mg/kg) is well above the application range as given in ASTM D5185:13e1 table 3 (0.5 – 4 mg/kg) it was decided to use the reproducibility from ASTM D5185:13e1 as the calculated reproducibility is in good agreement with the requirements of ASTM D5185:13e1. Therefore the determination was considered to be not problematic. No statistical outliers were observed.

Chromium: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D5185:13e1.

Copper: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D5185:13e1.

Iron: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D5185:13e1.

Lead: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D5185:13e1.

Lithium: Unfortunately, no precision or application range is mentioned in ASTM D5185:13e1 for Lithium, therefore the calculated reproducibility may be compared to the reproducibility estimated from the Horwitz equation. However, the observed concentration for Lithium is very low and leads to a very strict target reproducibility for this determination. Therefore, it was decided not to calculate z-scores.

Magnesium: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D5185:13e1.

Manganese: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D5185:13e1.

Molybdenum This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D5185:13e1.

Nickel: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the requirements of ASTM D5185:13e1.

Sodium: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D5185:13e1.

Silicon: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D5185:13e1.

Silver: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in full agreement with the requirements of ASTM D5185:13e1.

Tin: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in good agreement with the requirements of ASTM D5185:13e1.

Titanium: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D5185:13e1.

Vanadium: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the requirements of ASTM D5185:13e1.

Calcium: It was decided to use the estimated reproducibility using the Horwitz equation instead of the strict reproducibility of ASTM D5185:13e1.
This determination was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the estimated requirements from the Horwitz equation.

Phosphorus: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D5185:13e1.

Zinc: This determination was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the requirements of ASTM D5185:13e1.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of participating laboratories. The target reproducibilities derived from literature reference test methods (R (lit)) and the calculated reproducibilities (2.8 * sd) are compared in the next table;

Parameter	*unit*	*n*	*average*	*2.8 * sd*	*R(lit)*
Total Acid Number	mg KOH/g	42	0.49	0.18	0.22
Density at 15°C	kg/L	34	0.8744	0.0005	0.0005
Flash Point PMcc	°C	29	196.7	11.8	10.0
Kinematic viscosity at 40°C	mm^2/s	38	40.015	0.607	0.720
Kinematic viscosity at 100°C	mm^2/s	35	7.091	0.162	0.156
Viscosity Stabinger at 40°C	mm^2/s	16	40.059	0.537	0.551
Viscosity Stabinger at 100°C	mm^2/s	16	7.091	0.104	0.094
Sulphur	mg/kg	22	5255	546	480
Water	mg/kg	39	70	93	216
Level of contamination ≥ 4µm (c)	counts/ml	19	565	997	645
Level of contamination ≥ 6µm (c)	counts/ml	19	99	172	76
Level of contamination ≥14µm (c)	counts/ml	20	9.0	16.3	12.3
Level of contamination ≥ 4µm (c)	scale number	26	16.5	2.8	1.7
Level of contamination ≥ 6µm (c)	scale number	27	14.2	3.7	1.2
Level of contamination ≥14µm (c)	scale number	26	10.6	3.4	2.0

Table 5: reproducibilities of test results of sample #16241.

Parameter	*Unit*	*n*	*average*	*2.8 * sd*	*R (lit)*
Aluminium as Al	mg/kg	39	10.9	3.2	7.1
Barium as Ba	mg/kg	37	(10.8)	2.7	5.3
Chromium as Cr	mg/kg	40	10.9	2.9	3.5
Copper as Cu	mg/kg	40	11.0	2.5	2.6
Iron as Fe	mg/kg	39	12.9	2.8	4.0
Lead as Pb	mg/kg	39	11.1	3.3	7.1
Lithium as Li	mg/kg	10	0.59	3.0	(0.3)
Magnesium as Mg	mg/kg	37	10.9	3.9	4.5
Manganese as Mn	mg/kg	35	10.6	2.1	2.2
Molybdenum as Mo	mg/kg	37	10.7	3.1	3.5
Nickel as Ni	mg/kg	41	10.7	2.7	4.9
Sodium as Na	mg/kg	35	10.3	5.6	5.8
Silicon as Si	mg/kg	37	11.0	3.6	7.4
Silver as Ag	mg/kg	38	10.7	3.4	3.7
Tin as Sn	mg/kg	38	10.9	2.8	9.2
Titanium as Ti	mg/kg	34	10.8	2.3	7.7
Vanadium as V	mg/kg	39	10.8	2.5	3.8
Calcium as Ca	mg/kg	37	56.1	21.5	13.7
Phosphorus as P	mg/kg	37	341.5	65.4	79.5
Zinc as Zn	mg/kg	39	389.7	93.0	58.7

Table 6: reproducibilities of test results of sample #16242

The figures between brackets should be used with care as these were lower or above the application range of reference method

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF NOVEMBER 2016 WITH THE PREVIOUS PTS.

	November 2016	*November 2015*	*November 2014*	*November 2013*	*November 2012*
Number of reporting labs	51	55	42	42	40
Number of test results reported	1168	1126	922	776	754
Statistical outliers	29	43	55	41	46
Percentage outliers	2.5%	3.8%	6.0%	5.3%	6.1%

Table 7: comparison with previous proficiency tests.

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

Determination	*November 2016*	*November 2015*	*November 2014*	*November 2013*	*November 2012*
Total Acid Number	+	+	++	(--)	+/-
Density at 15°C	+/-	+/-	+/-	+/-	--
Flash Point PMcc	-	+	+/-	++	-
Kinematic viscosity at 40°C	+	++	-	--	--
Kinematic viscosity at 100°C	+/-	+/-	-	--	--
Viscosity Stabinger at 40°C	+/-	++	++	n.e.	n.e.
Viscosity Stabinger at 100°C	+/-	+	++	n.e.	n.e.
Sulphur	-	--	--	n.e.	n.e.
Water	++	++	++	++	++
Level of Contamination – counts/ml	-	--	n.e.	n.e.	n.e.
Level of Contamination – scale no.	-	n.e.	n.e.	n.e.	n.e.
Aluminium as Al	++	++	++	(++)	++
Barium as Ba	++	+	++	-	(-)
Chromium as Cr	+	+	++	--	++
Copper as Cu	+/-	+	+/-	+	+/-
Iron as Fe	+	++	++	-	+/-
Lead as Pb	++	++	++	(++)	++
Lithium as Li	(--)	-	-	++	++
Magnesium as Mg	+	+/-	++	+	++
Manganese as Mn	+/-	+/-	++	(--)	--
Molybdenum as Mo	+	+/-	+	(--)	++
Nickel as Ni	++	++	++	(++)	++
Sodium as Na	+/-	+/-	+	-	--
Silicon as Si	++	++	++	+	++
Silver as Ag	+/-	+	+	--	--
Tin as Sn	++	++	++	(+)	++

Determination	*November 2016*	*November 2015*	*November 2014*	*November 2013*	*November 2012*
Titanium as Ti	++	++	++	(++)	++
Vanadium as V	+	++	++	--	++
Calcium as Ca	-	-	-	--	--
Phosphorus as P	+	+/-	+	--	--
Zinc as Zn	-	--	++	-	--

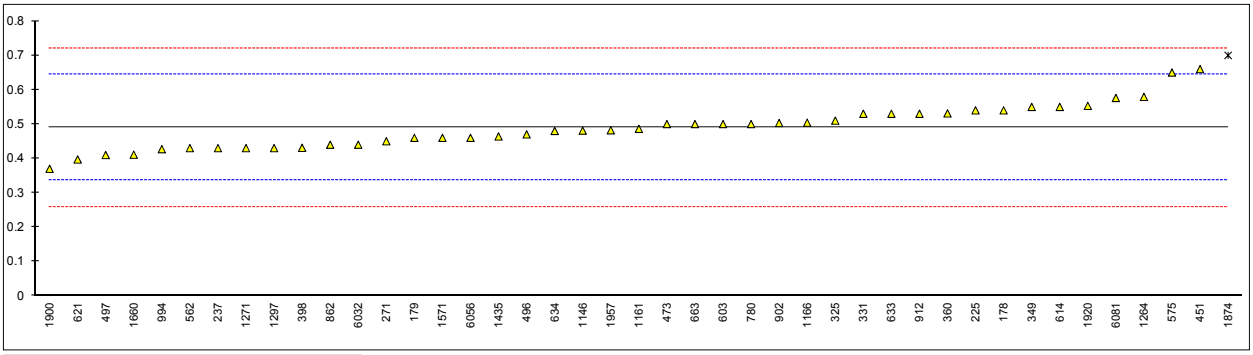
Table 8: comparison determinations against the reference test methods
The figures between brackets should be used with care as these were lower or above the application range of reference method

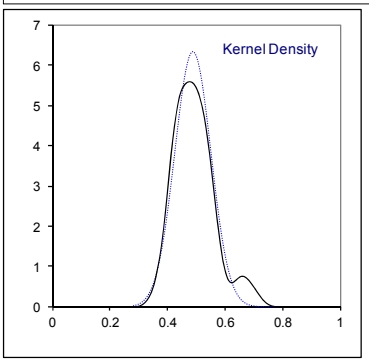
++: group performed much better than the reference test method
+ : group performed better than the reference test method
+/-: group performance equals the reference test method
- : group performed worse than the reference test method
-- : group performed much worse than the reference test method

APPENDIX 1

Determination of Acid Number (Total) on sample #16241; results in mg KOH/g.

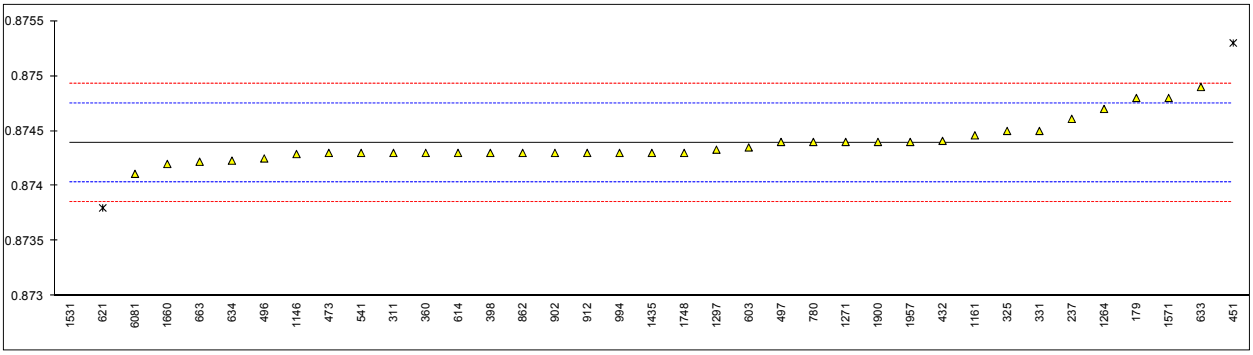
lab	method	value	mark	z(targ)	remarks
178	D974	0.54		0.65	
179	D664-A	0.46		-0.39	
214		-----		-----	
225	D974	0.54		0.65	
237	D664-A	0.43		-0.78	
255		-----		-----	
271	D664-A	0.45		-0.52	
311		-----		-----	
325	D664-A	0.51		0.26	
331	D664-Amod.	0.53		0.52	
349	D664-A	0.55		0.78	
360	D974	0.531		0.53	
398	D664-A	0.431		-0.76	
432		-----		-----	
442		-----		-----	
451	D664-A	0.66		2.21	
473	D664-A	0.5		0.13	
496	D664-A	0.47		-0.26	
497	D664-A	0.41		-1.04	
541		-----		-----	
550		-----		-----	
562	D664-A	0.43		-0.78	
575	D664-A	0.65		2.08	
603	D664-A	0.50		0.13	
614	D664-A	0.55		0.78	
621	D664-A	0.397		-1.21	
633	D664-A	0.53		0.52	
634	D664-A	0.48	C	-0.13	first reported: 0.869
663	D664-A	0.50		0.13	
780	D664-A	0.50		0.13	
862	D664-A	0.44		-0.65	
902	D664-A	0.503		0.17	
912	D664-A	0.53		0.52	
962		-----		-----	
963		-----		-----	
994	D664-A	0.427		-0.82	
1146	D664-A	0.481		-0.12	
1161	D664-A	0.486		-0.05	
1166	D664-A	0.504		0.18	
1264	D664-A	0.579		1.16	
1271	ISO6618	0.43		-0.78	
1297	D664-A	0.43		-0.78	
1372		-----		-----	
1435	D664-A	0.464		-0.34	
1531		-----		-----	
1571	D664-A	0.460		-0.39	
1660	IEC62021-1	0.411		-1.02	
1748		-----		-----	
1874	E2412	0.7	ex	2.73	method not suitable for TAN analysis
1900		0.37		-1.56	
1920	D664-A	0.553		0.82	
1957	D664-A	0.482		-0.10	
2160		-----		-----	
6016		-----		-----	
6032	D664-A	0.44		-0.65	
6056	D664-A	0.46		-0.39	
6081	D664-A	0.576		1.12	
	normality	OK			
	n	42			
	outliers	0+1ex			
	mean (n)	0.4899			
	st.dev. (n)	0.06282			
	R(calc.)	0.1759			
	R(D664-A:11ae1)	0.2177			

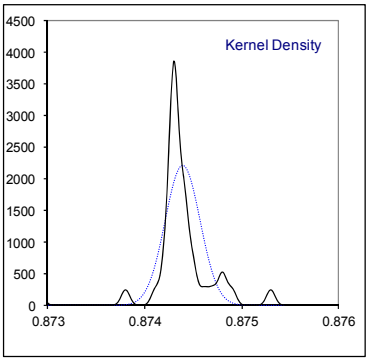

0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1900 621 497 1660 994 562 237 1271 1297 398 862 6032 271 179 1571 6056 1435 496 634 1146 1957 1161 473 663 603 780 902 1166 325 331 633 912 360 225 178 349 614 1920 6081 1264 575 451 1874


Kernel Density
7
6
5
4
3
2
1
0
0 0.2 0.4 0.6 0.8 1

Determination of Density at 15°C on sample #16241; results in kg/L.

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179	D4052	0.8748		2.30	
214		-----		-----	
225		-----		-----	
237	D4052	0.87461		1.23	
255		-----		-----	
271		-----		-----	
311	D4052	0.8743		-0.50	
325	D4052	0.8745		0.62	
331	ISO12185	0.8745		0.62	
349		-----		-----	
360	ISO12185	0.8743		-0.50	
398	ISO12185	0.8743		-0.50	
432	ISO12185	0.87441		0.11	
442		-----		-----	
451	D4052	0.8753	R(0.01)	5.10	
473	D4052	0.8743	C	-0.50	first reported: 874.3 kg/L
496	ISO12185	0.87425		-0.78	
497	D4052	0.8744	C	0.06	first reported: 0.87375
541	ISO12185	0.87430		-0.50	
550		-----		-----	
562		-----		-----	
575		-----		-----	
603	D4052	0.87435		-0.22	
614	D4052	0.8743		-0.50	
621	D4052	0.8738	R(0.05)	-3.30	
633	D4052	0.8749	C	2.86	reported: 0.8749 kg/m^3
634	D4052	0.87423		-0.90	
663	D4052	0.87422		-0.95	
780	ISO12185	0.8744		0.06	
862	D4052	0.8743		-0.50	
902	D4052	0.8743		-0.50	
912	D4052	0.8743		-0.50	
962		-----		-----	
963		-----		-----	
994	ISO12185	0.8743		-0.50	
1146	ISO12185	0.87429		-0.56	
1161	ISO12185	0.87446		0.39	
1166		-----		-----	
1264	D4052	0.8747		1.74	
1271	ISO12185	0.8744		0.06	
1297	D4052	0.87433	C	-0.34	first reported: 874.33 kg/L
1372		-----		-----	
1435	D4052	0.8743		-0.50	
1531	D4052	0.872912	R(0.01)	-8.28	
1571	D7042	0.8748		2.30	
1660	D7042	0.8742		-1.06	
1748	D4052	0.8743		-0.50	
1874		-----		-----	
1900	D4052	0.8744		0.06	
1920		-----		-----	
1957	D4052	0.8744		0.06	
2160		-----		-----	
6016		-----		-----	
6032		-----		-----	
6056		-----		-----	
6081	D4052	0.87411	C	-1.57	first reported: 874.11 kg/L
	normality	not OK			
	n	34			
	outliers	3			
	mean (n)	0.87439			
	st.dev. (n)	0.000180			
	R(calc.)	0.00050			
	R(ISO12185:96)	0.00050			

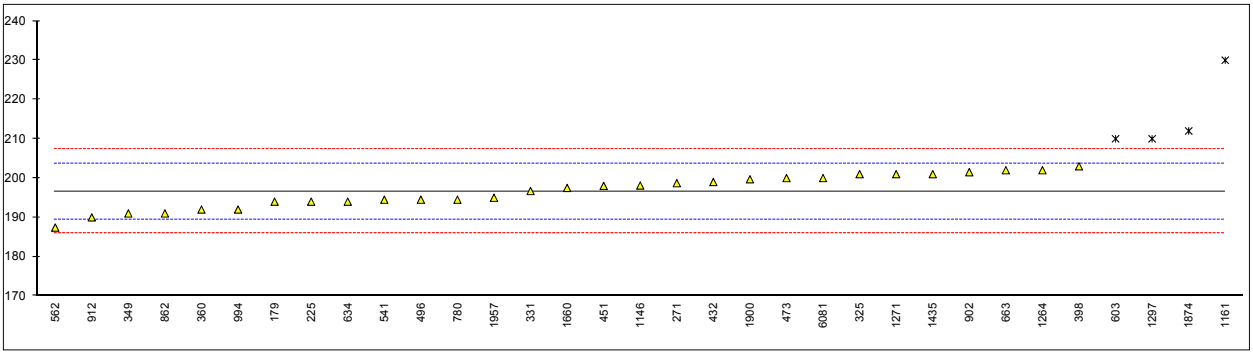

0.8755
0.875
0.8745
0.874
0.8735
0.873
1531 621 6081 1660 663 634 496 1146 473 541 311 360 614 398 862 902 912 994 1435 1748 1297 603 497 780 1271 1900 1957 432 1161 325 331 237 1264 179 1571 633 451

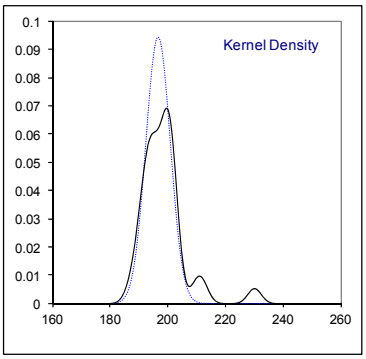

Kernel Density
4500
4000
3500
3000
2500
2000
1500
1000
500
0
0.873
0.874
0.875
0.876

Determination of Flash Point PMcc on sample #16241; results in °C.

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179	D93-A	194.0		-0.74	
214		-----		-----	
225	D93-A	194.0		-0.74	
237		-----		-----	
255		-----		-----	
271	D93-A	198.7		0.57	
311		-----		-----	
325	D93-A	201		1.22	
331	D93-A	196.7		0.01	
349	D93-A	191		-1.58	
360	D93-B	192.0		-1.30	
398	D93-A	203		1.78	
432	D93-A	199.0		0.66	
442		-----		-----	
451	D93-A	198		0.38	
473	D93-A	200.0		0.94	
496	D93-A	194.5		-0.60	
497		-----		-----	
541	D93-A	194.50		-0.60	
550		-----		-----	
562	D93	187.4		-2.59	
575		-----		-----	
603	D3828	210.0	R(0.05)	3.74	
614		-----		-----	
621		-----		-----	
633		-----		-----	
634	D93-A	194.0		-0.74	
663	D93-B	202.0		1.50	
780	D93-B	194.5		-0.60	
862	D93-A	191.0		-1.58	
902	D93-A	201.5		1.36	
912	D93-A	190		-1.86	
962		-----		-----	
963		-----		-----	
994	D93-B	192.0		-1.30	
1146	D93-Amod.	198.1		0.40	
1161	ISO2592	230	ex, C	9.34	Result excluded, test method is open cup; first reported: 222.0
1166		-----		-----	
1264	D93-A	202		1.50	
1271	ISO2719-A	201		1.22	
1297	D93-B	210	R(0.05)	-----	reported test result with remark: “not to meet the repeatability criteria”
1372		-----		-----	
1435	D93-A	201.0		1.22	
1531		-----		-----	
1571		-----		-----	
1660	D93-A	197.5		0.24	
1748		-----		-----	
1874	D92	212	ex	4.30	Result excluded, test method is open cup
1900	D7094	199.7		0.85	
1920		-----		-----	
1957	D93-A	195		-0.46	
2160		-----		-----	
6016		-----		-----	
6032		-----		-----	
6056		-----		-----	
6081	D93-B	200.0		0.94	

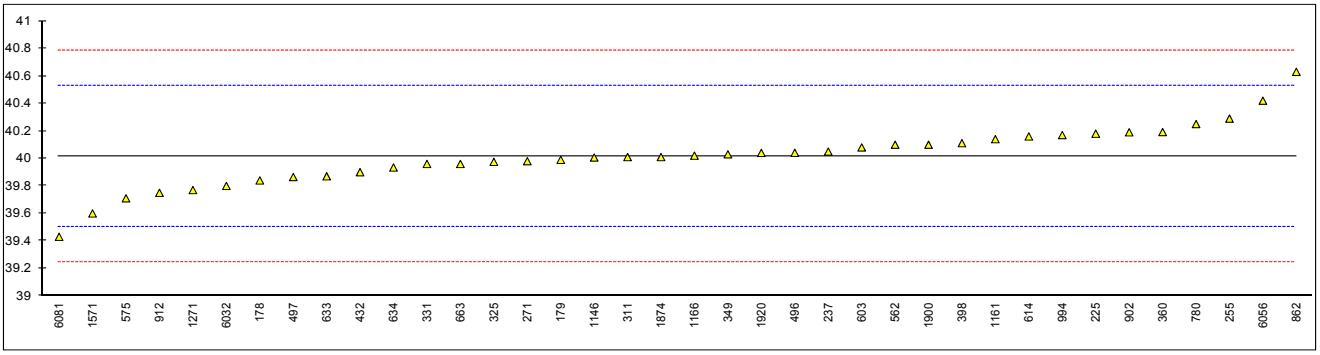
			Only D93-method A	Only D93-method B
normality		OK	OK	OK
n		29	20	5
outliers		2+2 ex	0	1
mean (n)		196.66	196.82	196.10
st.dev. (n)		4.219	3.936	4.642
R(calc.)		11.81	11.02	13.00
R(D93-B:16a)		10.00	--	10
Compare	R(D93-A:16a)	13.96	13.99	--

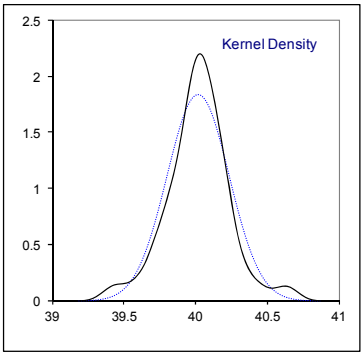

240
230
220
210
200
190
180
170
562
912
349
862
360
994
179
225
634
541
496
780
1957
331
1660
451
1146
271
432
1900
473
6081
325
1271
1435
902
663
1264
398
603
1297
1874
1161


Kernel Density
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
160
180
200
220
240
260

Determination of Kinematic Viscosity at 40°C on sample #16241; results in mm^2/s.

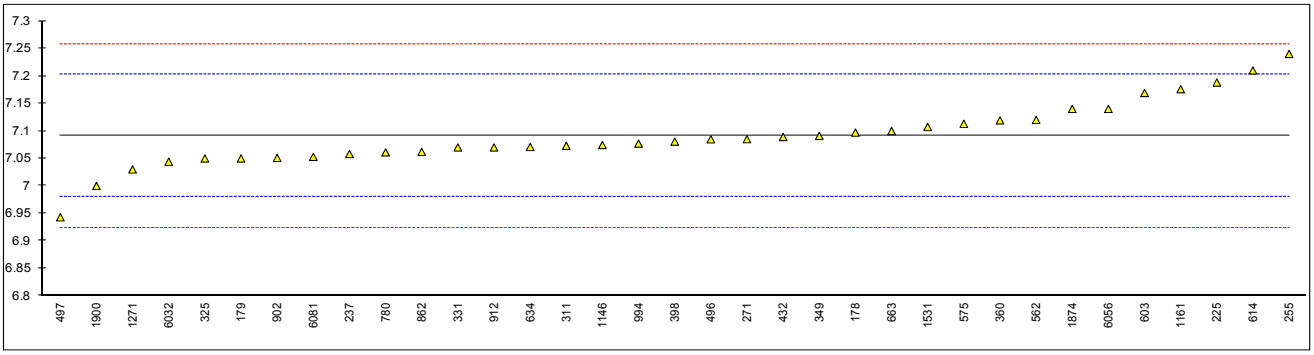
lab	method	value	mark	z(targ)	remarks
178	D445	39.84		-0.68	
179	D445	39.99		-0.10	
214		-----		-----	
225	D445	40.18		0.64	
237	D445	40.05		0.14	
255	D7279	40.29		1.07	
271	D445	39.98		-0.13	
311	D445	40.01		-0.02	
325	D445	39.975		-0.15	
331	D7279mod.	39.96		-0.21	
349	D445	40.03		0.06	
360	ISO3104	40.192		0.69	
398	D445	40.111		0.37	
432	D445	39.90		-0.45	
442		-----		-----	
451		-----		-----	
473		-----		-----	
496	D445	40.041		0.10	
497	D7279	39.865		-0.58	
541		-----		-----	
550		-----		-----	
562	D445	40.1		0.33	
575	D7279	39.71		-1.18	
603	D445	40.08		0.25	
614	D445	40.16		0.57	
621		-----		-----	
633	D7279	39.87		-0.56	
634	D445	39.934		-0.31	
663	D445	39.960		-0.21	
780	D445	40.25		0.92	
862	D445	40.63	C	2.39	reported accidently the test value in K.V at 100°C
902	D445	40.19		0.68	
912	D445	39.75		-1.03	
962		-----		-----	
963		-----		-----	
994	D445	40.17		0.60	
1146	D445	40.007		-0.03	
1161	ISO3104	40.14		0.49	
1166	ISO3104	40.02		0.02	
1264		-----		-----	
1271	ISO3104	39.77		-0.95	
1297		-----		-----	
1372		-----		-----	
1435		-----		-----	
1531		-----		-----	
1571	D445	39.60	C	-1.61	first reported: 39.28
1660		-----		-----	
1748		-----		-----	
1874	D445	40.01		-0.02	
1900	D445	40.1		0.33	
1920	D445	40.040		0.10	
1957		-----		-----	
2160		-----		-----	
6016		-----		-----	
6032	D7279	39.80		-0.83	
6056	D445	40.42		1.58	
6081	D445	39.43	C	-2.27	first reported: 39.4293991
	normality	suspect			
	n	38			
	outliers	0			
	mean (n)	40.0146			
	st.dev. (n)	0.21693			
	R(calc.)	0.6074			compare R(D445:15a formulated oils)=0.488
	R(iis:15)	0.7203			R(iis:15) calculated wrt iis PTs on used oils for ASTM D445 (see ref 17)

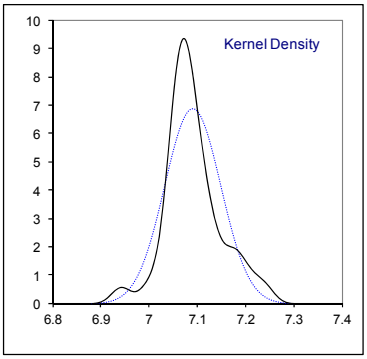

41
40.8
40.6
40.4
40.2
40
39.8
39.6
39.4
39.2
39
6081
1571
575
912
1271
6032
178
497
633
432
634
331
663
325
271
179
1146
311
1874
1166
349
1920
496
237
603
562
1900
398
1161
614
994
225
902
360
780
255
6056
862


Kernel Density
2.5
2
1.5
1
0.5
0
39
39.5
40
40.5
41

Determination of Kinematic Viscosity at 100°C on sample #16241; results in mm^2/s.

lab	method	value	mark	z(targ)	remarks
178	D445	7.097		0.11	
179	D445	7.05		-0.74	
214		-----		-----	
225	D445	7.188		1.74	
237	D445	7.058		-0.59	
255	D7279	7.24		2.67	
271	D445	7.085		-0.11	
311	D445	7.073		-0.32	
325	D445	7.050		-0.74	
331	D7279mod.	7.07		-0.38	
349	D445	7.091		0.00	
360	ISO3104	7.1192		0.51	
398	D445	7.0806		-0.19	
432	D445	7.089		-0.04	
442		-----		-----	
451		-----		-----	
473		-----		-----	
496	D445	7.0848		-0.11	
497	D7279	6.943		-2.66	
541		-----		-----	
550		-----		-----	
562	D445	7.12		0.52	
575	D7279	7.113	C	0.39	first reported: 6.927
603	D445	7.169		1.40	
614	D445	7.21		2.13	
621		-----		-----	
633		-----		-----	
634	D445	7.0708		-0.36	
663	D445	7.0998		0.16	
780	D445	7.061		-0.54	
862	D445	7.062	C	-0.52	reported accidently the test value in K.V at 40°C
902	D445	7.051		-0.72	
912	D445	7.070		-0.38	
962		-----		-----	
963		-----		-----	
994	D445	7.077		-0.25	
1146	D445	7.0744		-0.30	
1161	ISO3104	7.176	C	1.52	first reported: 7.211
1166		-----		-----	
1264		-----		-----	
1271	ISO3104	7.03		-1.10	
1297		-----		-----	
1372		-----		-----	
1435		-----		-----	
1531	D445	7.107184		0.29	
1571		-----		-----	
1660		-----		-----	
1748		-----		-----	
1874	D445	7.14		0.88	
1900	D445	7.00		-1.63	
1920		-----		-----	
1957		-----		-----	
2160		-----		-----	
6016		-----		-----	
6032	D7279	7.044		-0.84	
6056	D445	7.14		0.88	
6081	D445	7.0529229		-0.68	
	normality	suspect			
	n	35			
	outliers	0			
	mean (n)	7.09105			
	st.dev. (n)	0.057906			
	R(calc.)	0.16214			compare R(D445:15a formulated oils)=0.09786
	R(iis:15)	0.15600			R(iis:15) calculated wrt iis PTs on used oils for ASTM D445 (see ref 17)

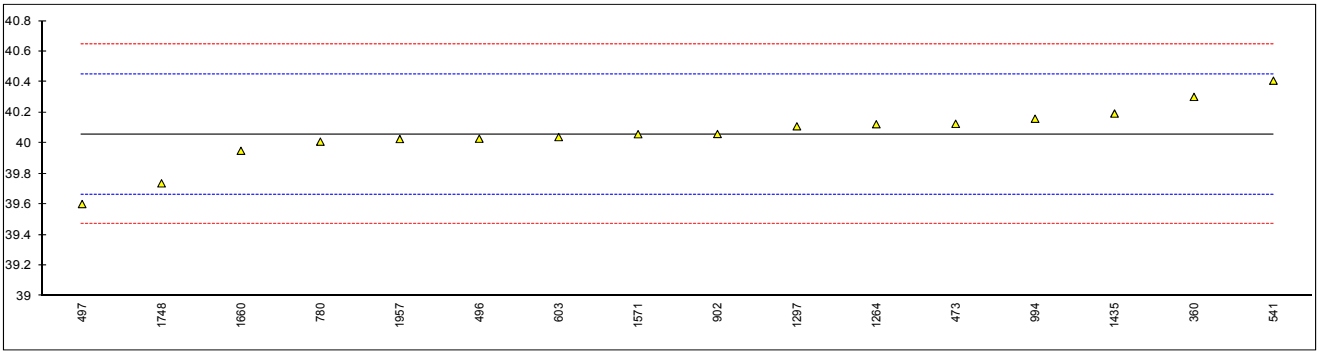

7.3
7.25
7.2
7.15
7.1
7.05
7
6.95
6.9
6.85
6.8
497
1900
1271
6032
325
179
902
6081
237
780
862
331
912
634
311
1146
994
398
496
271
432
349
178
663
1531
575
360
562
1874
6056
603
1161
225
614
255

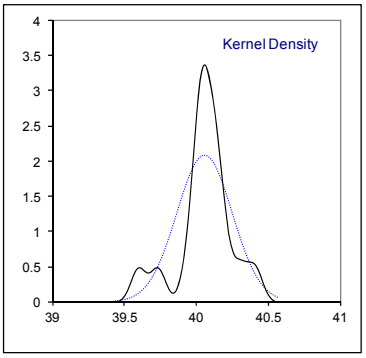

Kernel Density
10
9
8
7
6
5
4
3
2
1
0
6.8
6.9
7
7.1
7.2
7.3
7.4

Determination of Viscosity Stabinger at 40°C on sample #16241; results in mm^2/s.

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
214		-----		-----	
225		-----		-----	
237		-----		-----	
255		-----		-----	
271		-----		-----	
311		-----		-----	
325		-----		-----	
331		-----		-----	
349		-----		-----	
360	D7042	40.303		1.24	
398		-----		-----	
432		-----		-----	
442		-----		-----	
451		-----		-----	
473	D7042	40.127		0.35	
496	D7042	40.0295		-0.15	
497	D7042	39.6015		-2.33	
541	D7042	40.409		1.78	
550		-----		-----	
562		-----		-----	
575		-----		-----	
603	D7042	40.04		-0.10	
614		-----		-----	
621		-----		-----	
633		-----		-----	
634		-----		-----	
663		-----		-----	
780	D7042	40.01		-0.25	
862		-----		-----	
902	D7042	40.06		0.01	
912		-----		-----	
962		-----		-----	
963		-----		-----	
994	D7042	40.16		0.51	
1146		-----		-----	
1161		-----		-----	
1166		-----		-----	
1264	D7042	40.124		0.33	
1271		-----		-----	
1297	D7042	40.1105		0.26	
1372		-----		-----	
1435	D7042	40.194		0.69	
1531		-----		-----	
1571	D7042	40.0587		0.00	
1660	D7042	39.95		-0.55	
1748	D7042	39.737		-1.64	
1874		-----		-----	
1900		-----		-----	
1920		-----		-----	
1957	D7042	40.027		-0.16	
2160		-----		-----	
6016		-----		-----	
6032		-----		-----	
6056		-----		-----	
6081		-----		-----	

normality	suspect
n	16
outliers	0
mean (n)	40.0588
st.dev. (n)	0.19174
R(calc.)	0.5369
R(D7042:16e2)	0.5507

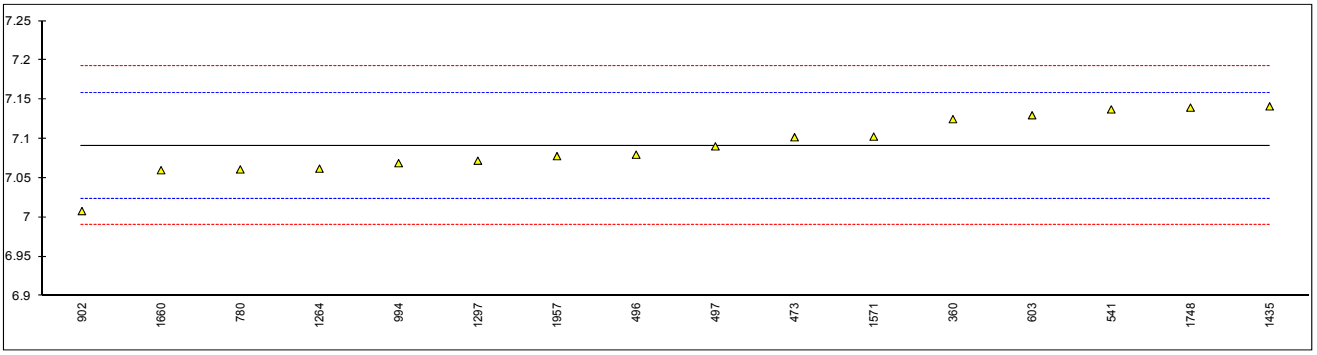

40.8
40.6
40.4
40.2
40
39.8
39.6
39.4
39.2
39
497
1748
1660
780
1957
496
603
1571
902
1297
1264
473
994
1435
360
541

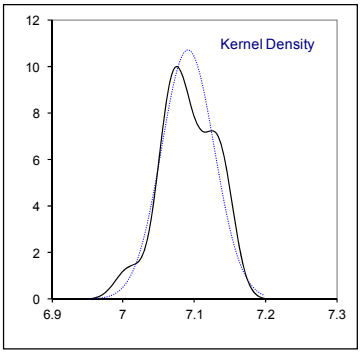

Kernel Density
4
3.5
3
2.5
2
1.5
1
0.5
0
39
39.5
40
40.5
41

Determination of Viscosity Stabinger at 100°C on sample #16241; results in mm^2/s.

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
214		-----		-----	
225		-----		-----	
237		-----		-----	
255		-----		-----	
271		-----		-----	
311		-----		-----	
325		-----		-----	
331		-----		-----	
349		-----		-----	
360	D7042	7.1250		1.01	
398		-----		-----	
432		-----		-----	
442		-----		-----	
451		-----		-----	
473	D7042	7.1020		0.32	
496	D7042	7.0798		-0.34	
497	D7042	7.0904		-0.02	
541	D7042	7.1374		1.37	
550		-----		-----	
562		-----		-----	
575		-----		-----	
603	D7042	7.130		1.15	
614		-----		-----	
621		-----		-----	
633		-----		-----	
634		-----		-----	
663		-----		-----	
780	D7042	7.061		-0.90	
862		-----		-----	
902	D7042	7.008		-2.47	
912		-----		-----	
962		-----		-----	
963		-----		-----	
994	D7042	7.069		-0.66	
1146		-----		-----	
1161		-----		-----	
1166		-----		-----	
1264	D7042	7.062		-0.87	
1271		-----		-----	
1297	D7042	7.0721		-0.57	
1372		-----		-----	
1435	D7042	7.1413		1.49	
1531		-----		-----	
1571	D7042	7.1028		0.35	
1660	D7042	7.06		-0.92	
1748	D7042	7.1397		1.44	
1874		-----		-----	
1900		-----		-----	
1920		-----		-----	
1957	D7042	7.0779		-0.39	
2160		-----		-----	
6016		-----		-----	
6032		-----		-----	
6056		-----		-----	
6081		-----		-----	

normality	OK
n	16
outliers	0
mean (n)	7.09115
st.dev. (n)	0.037167
R(calc.)	0.10407
R(D7042:16e2)	0.09431

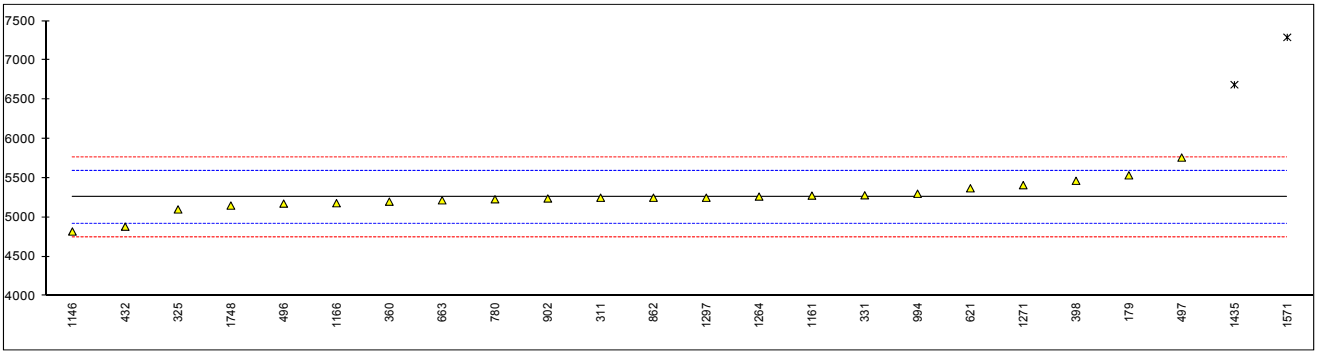

7.25
7.2
7.15
7.1
7.05
7
6.95
6.9
902
1660
780
1264
994
1297
1957
496
497
473
1571
360
603
541
1748
1435

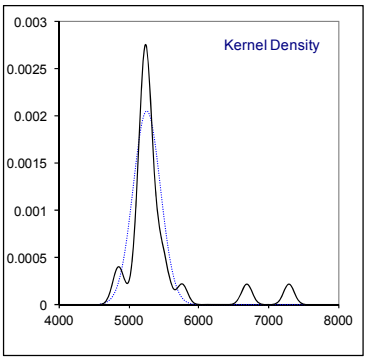

Kernel Density
12
10
8
6
4
2
0
6.9
7
7.1
7.2
7.3

Determination of Sulphur on sample #16241; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179	D4294	5535		1.63	
214		-----		-----	
225		-----		-----	
237		-----		-----	
255		-----		-----	
271		-----		-----	
311	D4294	5250	C	-0.03	first reported: 0.525 mg/kg
325	INH-6443	5101		-0.90	
331	ISO8754	5281		0.15	
349		-----		-----	
360	ISO8754	5200		-0.32	
398	D4294	5465.3		1.23	
432	D4951	4882		-2.18	
442		-----		-----	
451		-----		-----	
473		-----		-----	
496	D2622	5174.9		-0.47	
497	D5185	5761		2.95	
541		-----		-----	
550		-----		-----	
562		-----		-----	
575		-----		-----	
603		-----		-----	
614		-----		-----	
621	D4294	5370	C	0.67	reported: 0.537 mg/kg
633		-----		-----	
634		-----		-----	
663	D5453	5217		-0.22	
780	D4294	5230		-0.15	
862	D2622	5250		-0.03	
902	D4294	5240		-0.09	
912		-----		-----	
962		-----		-----	
963		-----		-----	
994	D4294	5301		0.27	
1146	D4294	4820		-2.54	
1161	ISO8754	5277		0.13	
1166	In house	5179.858	C	-0.44	first reported: 7291.32
1264	D4294	5265		0.06	
1271	D4294	5410		0.90	
1297	D4294	5250		-0.03	
1372		-----		-----	
1435	D5185	6688	R(0.01)	8.36	
1531		-----		-----	
1571	D5185	7291.32	R(0.01)	11.88	
1660		-----		-----	
1748	D6481	5150		-0.61	
1874		-----		-----	
1900		-----		-----	
1920		-----		-----	
1957		-----		-----	
2160		-----		-----	
6016		-----		-----	
6032		-----		-----	
6056		-----		-----	
6081		-----		-----	

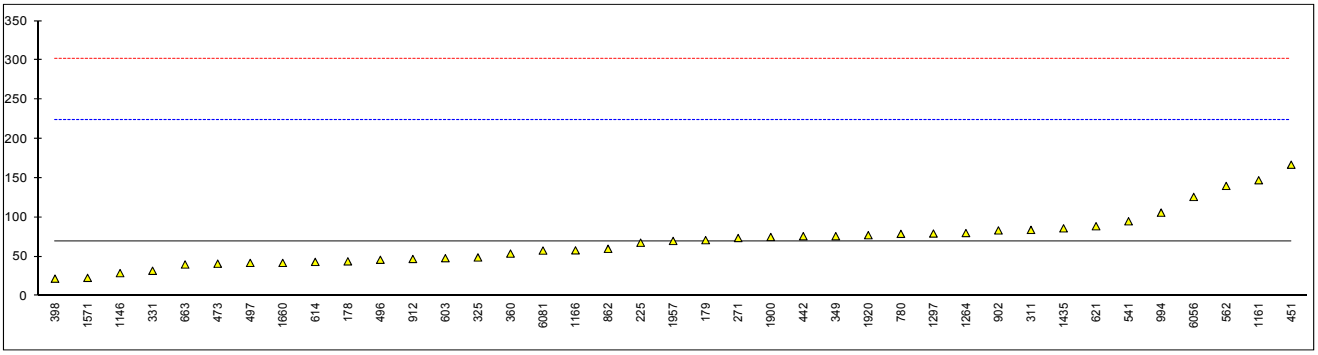
normality	not OK
n	22
outliers	2
mean (n)	5255.0
st.dev. (n)	195.16
R(calc.)	546.4
R(D4294:10)	479.9

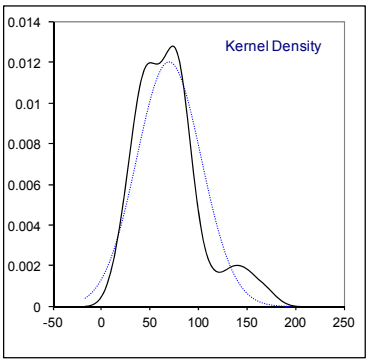

7500
7000
6500
6000
5500
5000
4500
4000
1146
432
325
1748
496
1166
360
663
780
902
311
862
1297
1264
1161
331
994
621
1271
398
179
497
1435
1571


Kernel Density
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
4000
5000
6000
7000
8000

Determination of Water by KF on sample #16241; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D6304-C	44		-0.34	
179	D6304-C	71		0.01	
214		-----		-----	
225	D6304-A	67.71		-0.03	
237		-----		-----	
255		-----		-----	
271	D6304-A	73.7		0.05	
311	D6304-A	84		0.18	
325	D6304-C	49		-0.27	
331	D6304mod.	32.0		-0.49	
349	D6304-A	76		0.08	
360	D6304-A	53.9		-0.21	
398	D6304-C	22		-0.62	
432		-----		-----	
442	IP438	76		0.08	
451	D6304-C	167		1.26	
473	D6304-C	41		-0.37	
496	D6304-C	46		-0.31	
497	D6304-C	42		-0.36	
541	D6304-A	95.0		0.33	
550		-----		-----	
562	E203	140		0.91	
575		-----		-----	
603	D6304-C	48		-0.28	
614	D6304-C	43.3		-0.34	
621	D6304-B	88.71		0.24	
633		-----		-----	
634		-----		-----	
663	D6304-C	40		-0.39	
780	D6304-A	79		0.12	
862	D6304-C	60		-0.13	
902	D6304-A	83.37		0.17	
912	D6304-C	47		-0.30	
962		-----		-----	
963		-----		-----	
994	D6304-A	106		0.47	
1146	D6304-C	29		-0.53	
1161	D6304-A	147.262		1.00	
1166	D6304-C	58		-0.15	
1264	D6304-A	80.0		0.13	
1271		-----		-----	
1297	D6304-A	79.4		0.12	
1372		-----		-----	
1435	D1744	86		0.21	
1531		-----		-----	
1571	D6304-C	23		-0.61	
1660	EN60814	42		-0.36	
1748		-----		-----	
1874	E2412	<500	C	-----	first reported: 0
1900	D6304-C	75		0.07	
1920	D6304-C	77.3		0.10	
1957	D6304-C	70		0.00	
2160		-----		-----	
6016		-----		-----	
6032		-----		-----	
6056	ISO12937	126.0		0.73	
6081	D6304-A	57.7510		-0.16	
	normality	not OK			
	n	39			
	outliers	0			
	mean (n)	69.91			
	st.dev. (n)	33.156			
	R(calc.)	92.84			
	R(D6304:16e1)	215.97			


350
300
250
200
150
100
50
0
398
1571
1146
331
663
473
497
1660
614
178
496
912
603
325
360
6081
1166
862
225
1957
179
271
1900
442
349
1920
780
1297
1264
902
311
1435
621
541
994
6056
562
1161
451

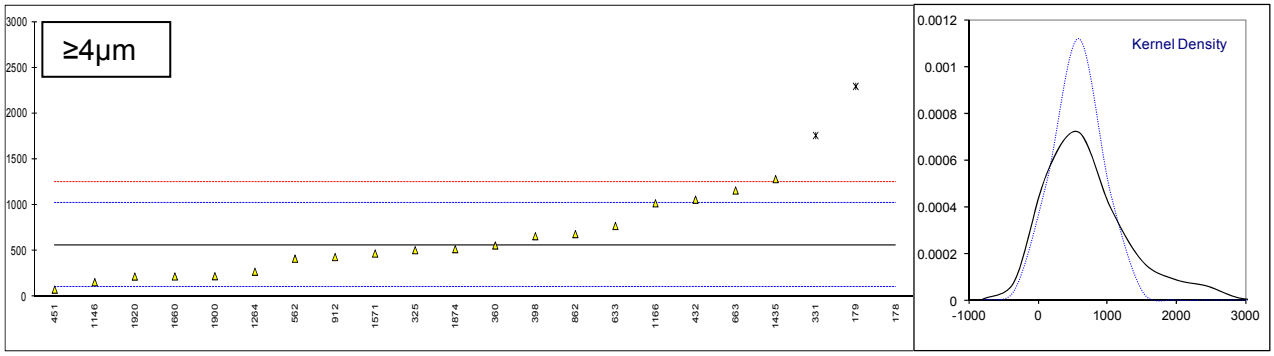

Kernel Density
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
-50
0
50
100
150
200
250

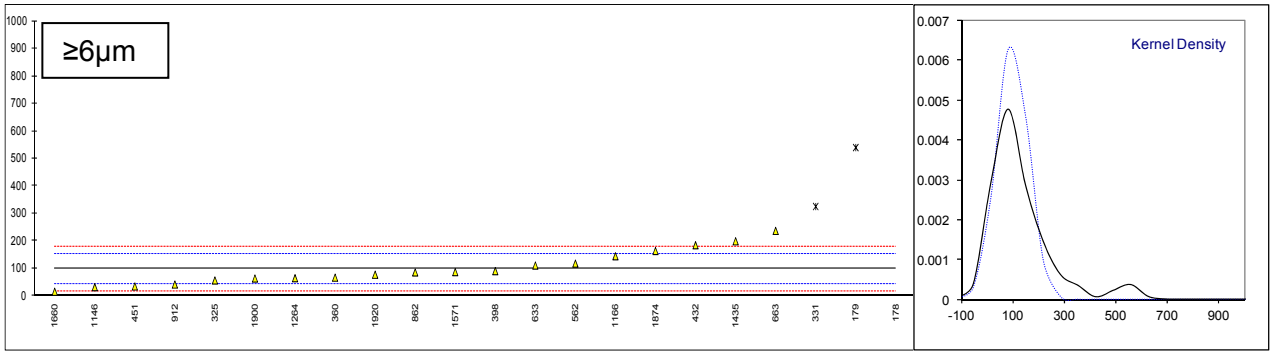
Determination of Level of Contamination on sample #16241; results in counts per ml.

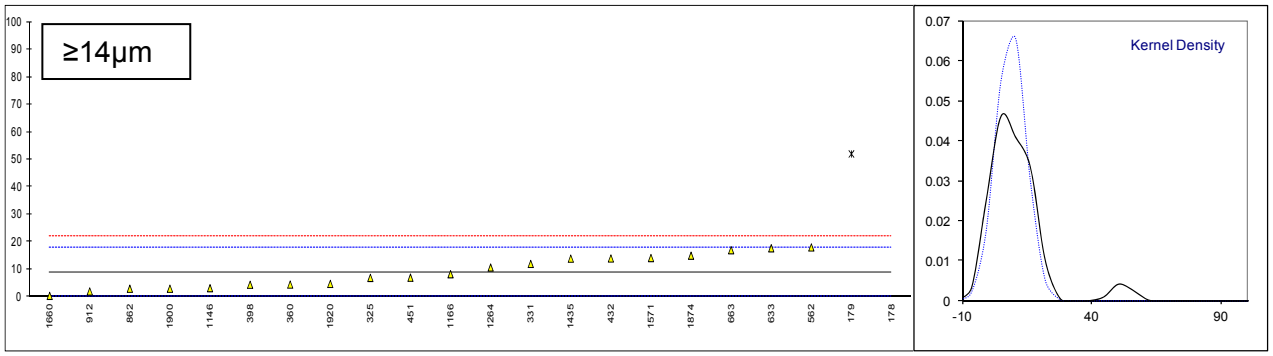
lab	method	≥ 4 µm	mark	z(targ)	≥ 6 µm	mark	z(targ)	≥ 14 µm	mark	z(targ)
178	INH-1185	116817	C,R(0.01)	504.49	17072	C,R(0.01)	625.49	1426	C,R(0.01)	323.17
179	D7647	2296	R(0.01)	7.51	540	R(0.01)	16.26	52	R(0.01)	9.81
214		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
255		-----		-----	-----		-----	-----		-----
271		-----		-----	-----		-----	-----		-----
311		-----		-----	-----		-----	-----		-----
325	ISO11500/4406	508.47		-0.24	56.87		-1.55	6.93		-0.47
331	ISO11500mod.	1760.0	R(0.05)	5.19	325.5	R(0.05)	8.35	12.0		0.68
349		-----		-----	-----		-----	-----		-----
360	ISO4406	560		-0.02	67		-1.18	4.5		-1.03
398	ISO4406	661.61	C	0.42	90.77	C	-0.30	4.43	C	-1.04
432	ISO11500	1060		2.15	185		3.17	14		1.14
442		-----		-----	-----		-----	-----		-----
451	ISO4407	78		-2.11	35		-2.35	7		-0.46
473		-----		-----	-----		-----	-----		-----
496		-----		-----	-----		-----	-----		-----
497		-----		-----	-----		-----	-----		-----
541		-----		-----	-----		-----	-----		-----
550		-----		-----	-----		-----	-----		-----
562	ISO4406	416	C	-0.65	118	C	0.70	18	C	2.05
575		-----		-----	-----		-----	-----		-----
603		-----		-----	-----		-----	-----		-----
614		-----		-----	-----		-----	-----		-----
621		-----		-----	-----		-----	-----		-----
633	ISO11500	772.5		0.90	111.15		0.45	17.7		1.98
634		-----		-----	-----		-----	-----		-----
663	D7647	1160		2.58	237		5.09	17		1.83
780		-----		-----	-----		-----	-----		-----
862	ISO4406	684		0.52	86		-0.48	3		-1.37
902		-----		-----	-----		-----	-----		-----
912	ISO4407	434		-0.57	42		-2.10	2		-1.60
962		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
994		-----		-----	-----		-----	-----		-----
1146	ISO11500	159.440		-1.76	32.407		-2.45	3.187		-1.33
1161		-----		-----	-----		-----	-----		-----
1166	D7647	1020.20		1.98	144.73		1.69	8.27		-0.17
1264	ISO4406	273.9		-1.26	65.1		-1.25	10.7		0.39
1271		-----		-----	-----		-----	-----		-----
1297		-----		-----	-----		-----	-----		-----
1372		-----		-----	-----		-----	-----		-----
1435	ISO4407	1283.9		3.12	199.27		3.70	13.93		1.13
1531		-----		-----	-----		-----	-----		-----
1571	ISO4407	472.14	C	-0.40	87.33	C	-0.43	14.15	C	1.18
1660		222		-1.49	15.8		-3.06	0.4		-1.96
1748		-----		-----	-----		-----	-----		-----
1874	D7596	520		-0.19	164		2.40	15		1.37
1900	D7596	225		-1.47	64		-1.29	3		-1.37
1920	D7596	221.30		-1.49	77.73		-0.78	4.74		-0.97
1957		-----		-----	-----		-----	-----		-----
2160		-----		-----	-----		-----	-----		-----
6016		-----		-----	-----		-----	-----		-----
6032		-----		-----	-----		-----	-----		-----
6056		-----		-----	-----		-----	-----		-----
6081		-----		-----	-----		-----	-----		-----
	normality	OK			OK			OK		
	n	19			19			20		
	outliers	3			3			2		
	mean (n)	564.87			98.903			8.9969		
	st.dev. (n)	355.951			61.4723			5.80951		
	R(calc.)	996.66			172.122			16.2666		
	R(D7647:10)	645.21			75.980			12.2773		

Lab 178 first reported: 128709; 22462; 5810.8 respectively for ≥ 4 µm, ≥ 6 µm and ≥ 14 µm

Labs 398, 562 and 1571 first reported the counts/ml test results in ISO codes tables


≥4µm
Kernel Density


≥6µm
Kernel Density


≥14µm
Kernel Density

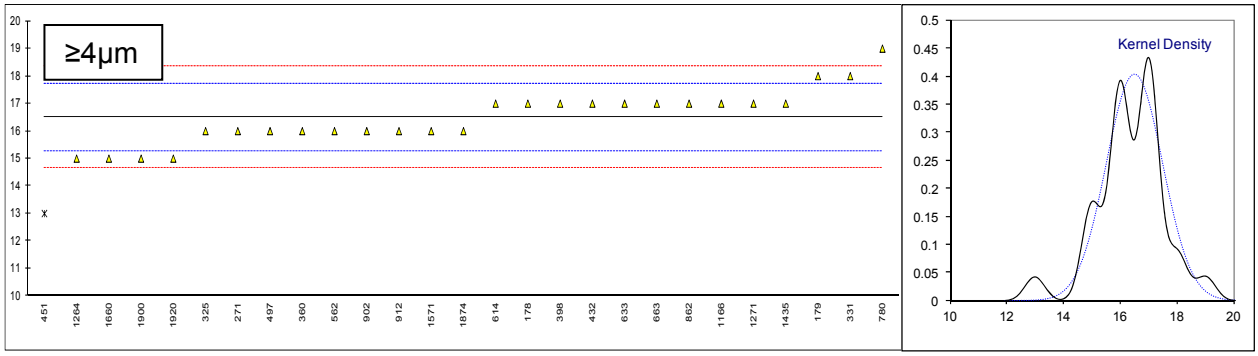
Determination of Level of Contamination acc. to ISO4406 scale on sample #16241; results in scale number

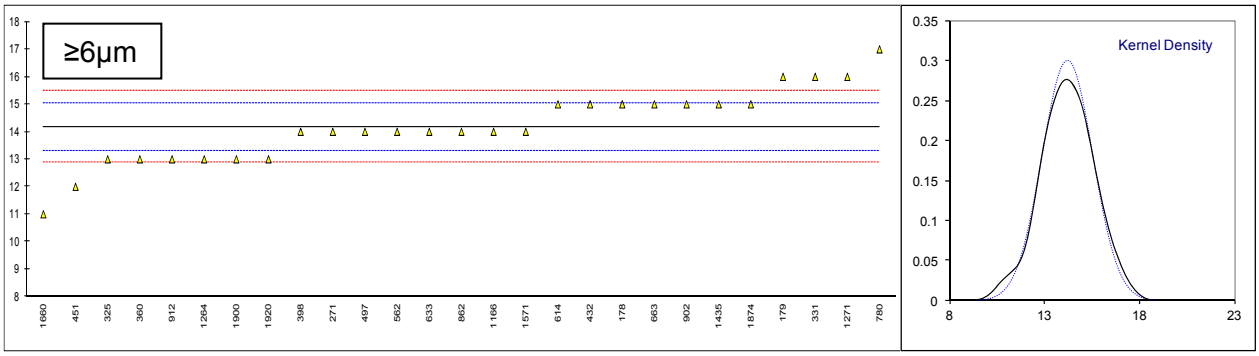
lab	method	≥ 4 µm	mark	z(targ)	≥ 6 µm	mark	z(targ)	≥ 14 µm	mark	z(targ)
178	ISO4406	17		0.81	15		1.88	11	C	0.59
179	ISO4406	18		2.44	16		4.19	13		3.36
214		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
255		-----		-----	-----		-----	-----		-----
271	ISO4406	16		-0.81	14		-0.43	11		0.59
311		-----		-----	-----		-----	-----		-----
325	ISO4406	16		-0.81	13		-2.74	10		-0.80
331	ISO4406	18		2.44	16		4.19	11		0.59
349		-----		-----	-----		-----	-----		-----
360	ISO4406	16		-0.81	13		-2.74	9		-2.18
398	ISO4406	17	C	0.81	14	C	-0.43	9	C	-2.18
432	ISO4406	17		0.81	15		1.88	11		0.59
442		-----		-----	-----		-----	-----		-----
451	ISO4406	13	R(0.05)	-5.70	12		-5.04	10		-0.80
473		-----		-----	-----		-----	-----		-----
496		-----		-----	-----		-----	-----		-----
497	ISO4406	16		-0.81	14		-0.43	11		0.59
541		-----		-----	-----		-----	-----		-----
550		-----		-----	-----		-----	-----		-----
562	ISO4406	16	C	-0.81	14	C	-0.43	11	C	0.59
575		-----		-----	-----		-----	-----		-----
603		-----		-----	-----		-----	-----		-----
614	ISO4406	17		0.81	15		1.88	11		0.59
621		-----		-----	-----		-----	-----		-----
633	ISO4406	17		0.81	14		-0.43	11		0.59
634		-----		-----	-----		-----	-----		-----
663	ISO4406	17		0.81	15		1.88	11		0.59
780	ISO4406	19		4.07	17		6.50	13		3.36
862	ISO4406	17		0.81	14		-0.43	9		-2.18
902	ISO4406	16		-0.81	15		1.88	11		0.59
912	ISO4406	16		-0.81	13		-2.74	8		-3.57
962		-----		-----	-----		-----	-----		-----
963		-----		-----	-----		-----	-----		-----
994		-----		-----	-----		-----	-----		-----
1146		-----		-----	-----		-----	-----		-----
1161		-----		-----	-----		-----	-----		-----
1166	ISO4406	17		0.81	14		-0.43	10		-0.80
1264	ISO4406	15		-2.44	13		-2.74	11		0.59
1271	ISO4406	17		0.81	16		4.19	12		1.97
1297		-----		-----	-----		-----	-----		-----
1372		-----		-----	-----		-----	-----		-----
1435	ISO4406	17		0.81	15		1.88	11		0.59
1531		-----		-----	-----		-----	-----		-----
1571	ISO4406	16	C	-0.81	14	C	-0.43	11	C	0.59
1660	ISO4406	15		-2.44	11		-7.35	6	R(0.05)	-6.34
1748		-----		-----	-----		-----	-----		-----
1874	ISO4406	16		-0.81	15		1.88	11		0.59
1900	D7647	15		-2.44	13		-2.74	9		-2.18
1920	ISO4406	15		-2.44	13		-2.74	9		-2.18
1957		-----		-----	-----		-----	-----		-----
2160		-----		-----	-----		-----	-----		-----
6016		-----		-----	-----		-----	-----		-----
6032		-----		-----	-----		-----	-----		-----
6056		-----		-----	-----		-----	-----		-----
6081		-----		-----	-----		-----	-----		-----
	normality	OK			OK			OK		
	n	26			27			26		
	outliers	1			0			1		
	mean (n)	16.5			14.2			10.6		
	st.dev. (n)	0.99			1.33			1.21		
	R(calc.)	2.8			3.7			3.4		
	R(D7647:10)	1.7			1.2			2.0		

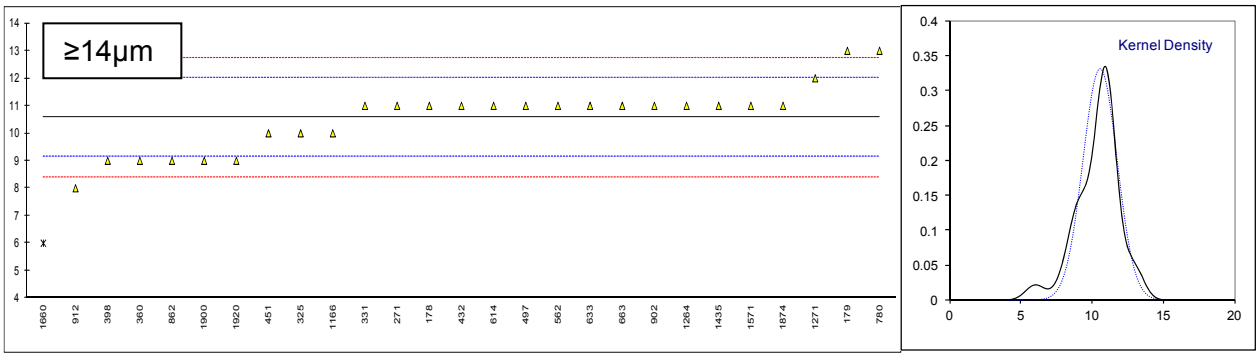
Lab 178 first reported 12 for ≥ 14 µm

Labs 398, 562 and 1571 first reported the counts/ml test results in ISO codes tables

Lab 1571 first reported: 17 for ≥ 4 µm

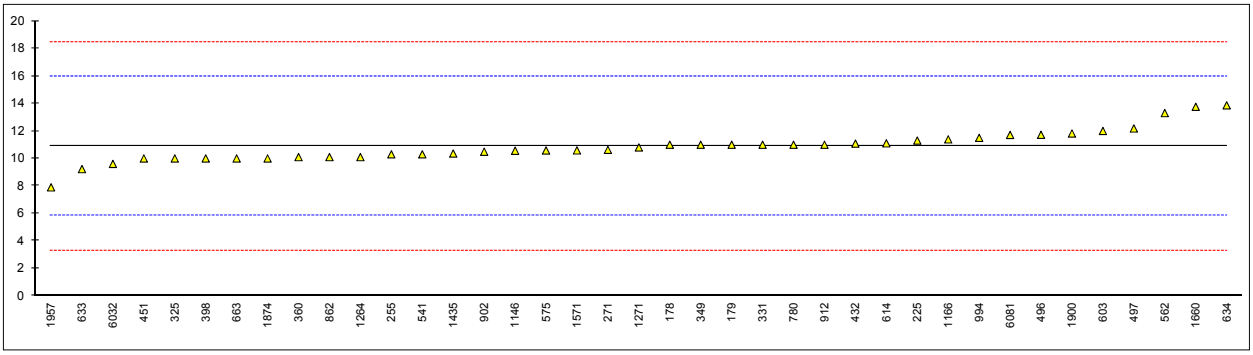

≥4µm
Kernel Density

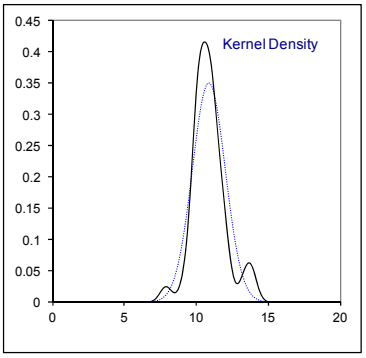

≥6µm
Kernel Density


≥14µm
Kernel Density

Determination of Aluminum (Al) on sample #16242; results in mg/kg.

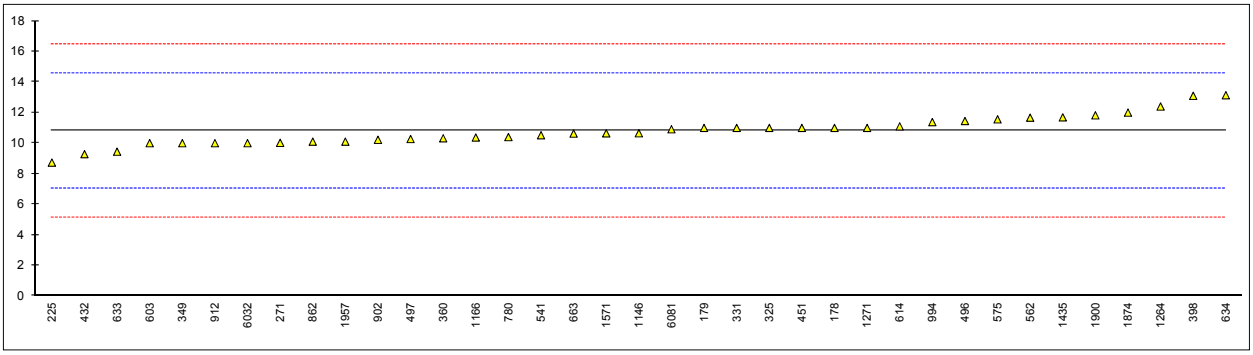
lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.05	
179	D5185	11		0.05	
214		-----		-----	
225	D6595	11.302		0.17	
237		-----		-----	
255	INH-01	10.30		-0.23	
271	D5185	10.625		-0.10	
311		-----		-----	
325	D5185	10		-0.35	
331	D5185mod.	11.0		0.05	
349	D5185	11		0.05	
360	D5185	10.1		-0.31	
398	D5185	10.0		-0.35	
432	D4951	11.08		0.08	
442		-----		-----	
451	D5185	10		-0.35	
473		-----		-----	
496	D5185	11.72		0.33	
497	D5185	12.18		0.51	
541	D5185	10.3		-0.23	
550		-----		-----	
562	D6595	13.3		0.96	
575	D6595	10.58		-0.12	
603	D5185	12		0.44	
614	D5185	11.1		0.09	
621		-----		-----	
633	D6595	9.223		-0.66	
634	D6595	13.863		1.18	
663	D5185	10.00		-0.35	
780	D5185	11		0.05	
862	D5185	10.1		-0.31	
902	D5185	10.49		-0.15	
912	D5185	11		0.05	
962		-----		-----	
963		-----		-----	
994	D5185	11.50		0.25	
1146	In house	10.56		-0.13	
1161		-----		-----	
1166	In house	11.388	C	0.20	first reported: 2.695
1264	D6595	10.1		-0.31	
1271	D5185	10.8		-0.03	
1297		-----		-----	
1372		-----		-----	
1435	D5185	10.36		-0.21	
1531		-----		-----	
1571	D5185	10.5841		-0.12	
1660	D5185	13.76		1.14	
1748		-----		-----	
1874	D6595	10.0		-0.35	
1900	D5185	11.817		0.37	
1920		-----		-----	
1957	D5185	7.9		-1.18	
2160		-----		-----	
6016		-----		-----	
6032	D6595	9.602		-0.51	
6056		-----		-----	
6081		11.71		0.33	
	normality	suspect			
	n	39			
	outliers	0			
	mean (n)	10.881			
	st.dev. (n)	1.1432			
	R(calc.)	3.201			
	R(D5185:13e1)	7.068			Application range: 6 – 40 mg/kg

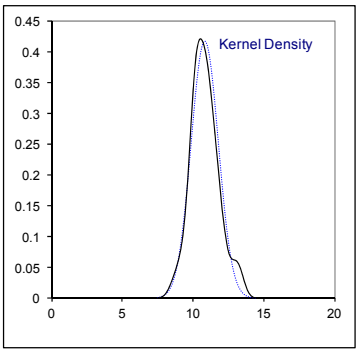

20
18
16
14
12
10
8
6
4
2
0
1957
633
6032
451
325
398
663
1874
360
862
1264
255
541
1435
902
1146
575
1571
271
1271
178
349
179
331
780
912
432
614
225
1166
994
6081
496
1900
603
497
562
1660
634


Kernel Density
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
5
10
15
20

Determination of Barium (Ba) on sample #16242; results in mg/kg.

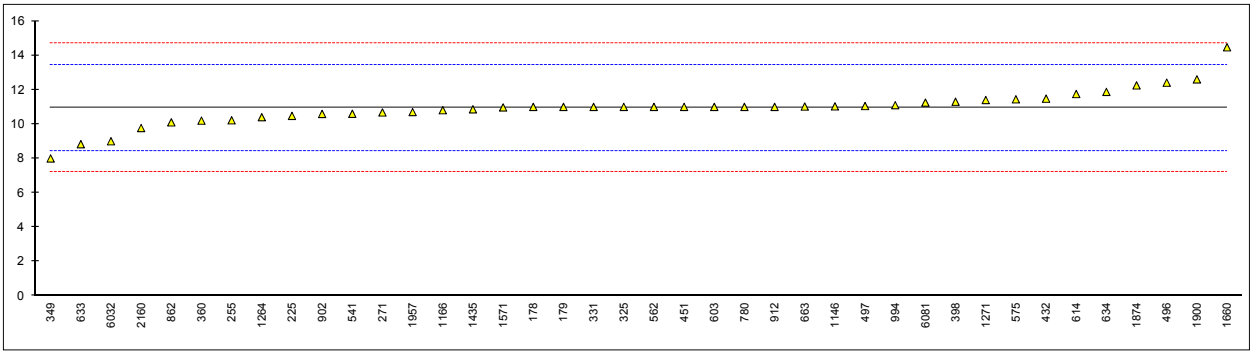
lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.10	
179	D5185	11		0.10	
214		-----		-----	
225	D6595	8.728		-1.11	
237		-----		-----	
255		-----		-----	
271	D5185	10.023		-0.42	
311		-----		-----	
325	D5185	11		0.10	
331	D5185mod.	11.0		0.10	
349	D5185	10		-0.43	
360	D5185	10.32		-0.26	
398	D5185	13.1		1.22	
432	D4951	9.28		-0.81	
442		-----		-----	
451	D5185	11		0.10	
473		-----		-----	
496	D5185	11.45		0.34	
497	D5185	10.27		-0.29	
541	D5185	10.52		-0.15	
550		-----		-----	
562	D6595	11.67		0.46	
575	D6595	11.56		0.40	reported: test value out of application range of D6595
603	D5185	10		-0.43	
614	D5185	11.1		0.15	
621		-----		-----	
633	D6595	9.443		-0.73	
634	D6595	13.139		1.24	
663	D5185	10.63		-0.09	
780	D5185	10.4		-0.22	
862	D5185	10.1		-0.38	
902	D5185	10.22		-0.31	
912	D5185	10		-0.43	
962		-----		-----	
963		-----		-----	
994	D5185	11.38		0.30	
1146	In house	10.65		-0.08	
1161		-----		-----	
1166	In house	10.370	C	-0.23	first reported: <1
1264	D6595	12.4		0.85	
1271	D5185	11		0.10	
1297		-----		-----	
1372		-----		-----	
1435	D5185	11.69		0.47	
1531		-----		-----	
1571	D5185	10.6440		-0.09	
1660	D5185	<5		<-3.09	possibly a false negative test result?
1748		-----		-----	
1874	D6595	12	C	0.63	first reported: 16.27
1900	D5185	11.823		0.54	
1920		-----		-----	
1957	D5185	10.1		-0.38	
2160		-----		-----	
6016		-----		-----	
6032	D6595	10		-0.43	
6056		-----		-----	
6081		10.91		0.05	
	normality	OK			
	n	37			
	outliers	0			
	mean (n)	10.809			
	st.dev. (n)	0.9570			
	R(calc.)	2.679			
	R(D5185:13e1)	5.271			Application range: 0.5 – 4 mg/kg

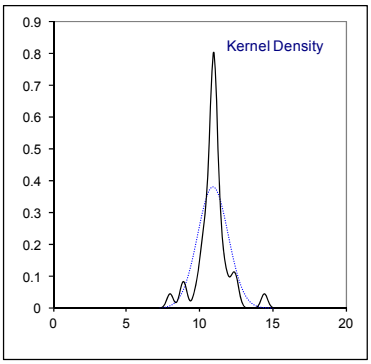

18
16
14
12
10
8
6
4
2
0
225 432 633 603 349 912 6032 271 862 1957 902 497 360 1166 780 541 663 1571 1146 6081 179 331 325 451 178 1271 614 994 496 575 562 1435 1900 1874 1264 398 634


Kernel Density
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0 5 10 15 20

Determination of Chromium (Cr) on sample #16242; results in mg/kg.

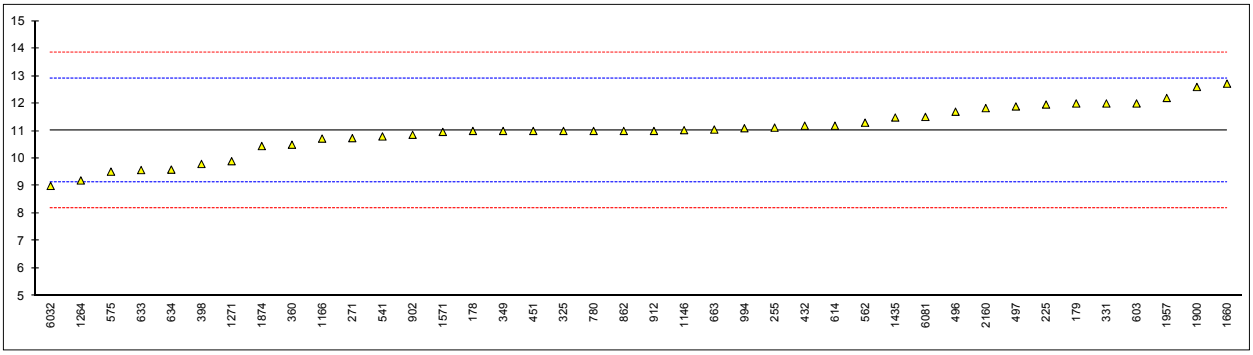
lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.05	
179	D5185	11		0.05	
214		-----		-----	
225	D6595	10.478		-0.37	
237		-----		-----	
255	INH-01	10.22		-0.58	
271	D5185	10.675		-0.21	
311		-----		-----	
325	D5185	11		0.05	
331	D5185mod.	11.0		0.05	
349	D5185	8		-2.36	
360	D5185	10.2		-0.59	
398	D5185	11.3		0.29	
432	D4951	11.48		0.43	
442		-----		-----	
451	D5185	11		0.05	
473		-----		-----	
496	D5185	12.41		1.18	
497	D5185	11.05		0.09	
541	D5185	10.6		-0.27	
550		-----		-----	
562	D6595	11.00		0.05	
575	D6595	11.44		0.40	
603	D5185	11		0.05	
614	D5185	11.75		0.65	
621		-----		-----	
633	D6595	8.83		-1.70	
634	D6595	11.872		0.75	
663	D5185	11.02		0.06	
780	D5185	11		0.05	
862	D5185	10.1		-0.68	
902	D5185	10.59		-0.28	
912	D5185	11		0.05	
962		-----		-----	
963		-----		-----	
994	D5185	11.1		0.13	
1146	In house	11.03		0.07	
1161		-----		-----	
1166	In house	10.805	C	-0.11	first reported: 0.482
1264	D6595	10.4		-0.43	
1271	D5185	11.4		0.37	
1297		-----		-----	
1372		-----		-----	
1435	D5185	10.86		-0.06	
1531		-----		-----	
1571	D5185	10.9690		0.02	
1660	D5185	14.47		2.84	
1748		-----		-----	
1874	D6595	12.25		1.05	
1900	D5185	12.601		1.33	
1920		-----		-----	
1957	D5185	10.7		-0.19	
2160	D6052	9.77		-0.94	
6016		-----		-----	
6032	D6595	9		-1.56	
6056		-----		-----	
6081		11.25		0.25	
	normality	not OK			
	n	40			
	outliers	0			
	mean (n)	10.941			
	st.dev. (n)	1.0449			
	R(calc.)	2.926			
	R(D5185:13e1)	3.486			Application range: 1 – 40 mg/kg

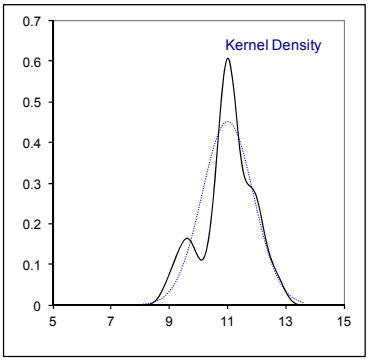

16
14
12
10
8
6
4
2
0
349
633
6032
2160
862
360
255
1264
225
902
541
271
1957
1166
1435
1571
178
179
331
325
562
451
603
780
912
663
1146
497
994
6081
398
1271
575
432
614
634
1874
496
1900
1660


Kernel Density
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20

Determination of Copper (Cu) on sample #16242; results in mg/kg.

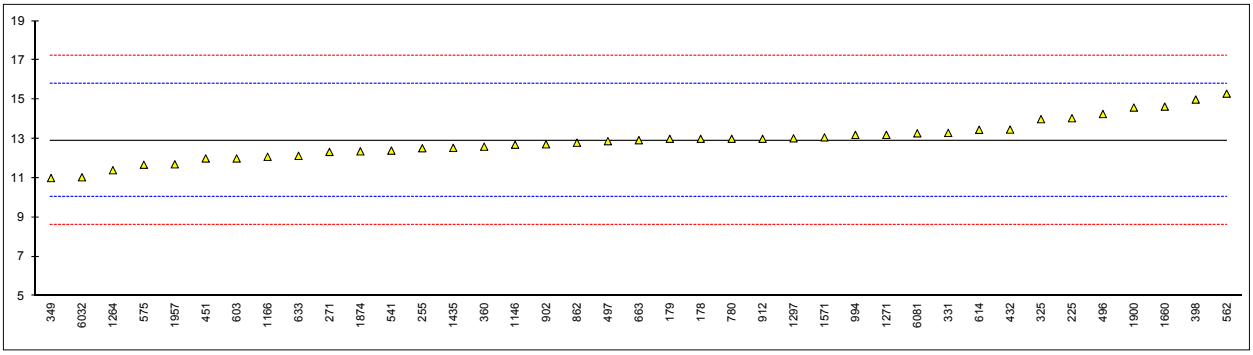
lab	method	value	mark	z(targ)	remarks
178	D5185	11		-0.01	
179	D5185	12		1.05	
214		-----		-----	
225	D6595	11.96		1.00	
237		-----		-----	
255	INH-01	11.12		0.11	
271	D5185	10.738		-0.29	
311		-----		-----	
325	D5185	11		-0.01	
331	D5185mod.	12.0		1.05	
349	D5185	11		-0.01	
360	D5185	10.5		-0.54	
398	D5185	9.8		-1.28	
432	D4951	11.19		0.19	
442		-----		-----	
451	D5185	11		-0.01	
473		-----		-----	
496	D5185	11.70		0.73	
497	D5185	11.89		0.93	
541	D5185	10.8		-0.23	
550		-----		-----	
562	D6595	11.30		0.30	
575	D6595	9.52		-1.58	
603	D5185	12		1.05	
614	D5185	11.19		0.19	
621		-----		-----	
633	D6595	9.577		-1.52	
634	D6595	9.593		-1.50	
663	D5185	11.05		0.04	
780	D5185	11		-0.01	
862	D5185	11.0		-0.01	
902	D5185	10.86		-0.16	
912	D5185	11		-0.01	
962		-----		-----	
963		-----		-----	
994	D5185	11.1		0.09	
1146	In house	11.03		0.02	
1161		-----		-----	
1166	In house	10.722	C	-0.31	first reported: 0.398
1264	D6595	9.2		-1.92	
1271	D5185	9.9		-1.18	
1297		-----		-----	
1372		-----		-----	
1435	D5185	11.49		0.51	
1531		-----		-----	
1571	D5185	10.9652		-0.05	
1660	D5185	12.72		1.81	
1748		-----		-----	
1874	D6595	10.45		-0.60	
1900	D5185	12.600		1.68	
1920		-----		-----	
1957	D5185	12.2		1.26	
2160	In house	11.83		0.87	
6016		-----		-----	
6032	D6595	9		-2.13	
6056		-----		-----	
6081		11.51		0.53	
	normality	OK			
	n	40			
	outliers	0			
	mean (n)	11.013			
	st.dev. (n)	0.8826			
	R(calc.)	2.471			
	R(D5185:13e1)	2.643			Application range: 2 – 160 mg/kg

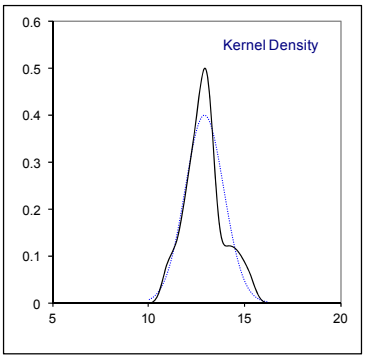

15
14
13
12
11
10
9
8
7
6
5
6032 1264 575 633 634 398 1271 1874 360 1166 271 541 902 1571 178 349 451 325 780 862 912 1146 663 994 255 432 614 562 1435 6081 496 2160 497 225 179 331 603 1957 1900 1660


Kernel Density
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5 7 9 11 13 15

Determination of Iron (Fe) on sample #16242; results in mg/kg.

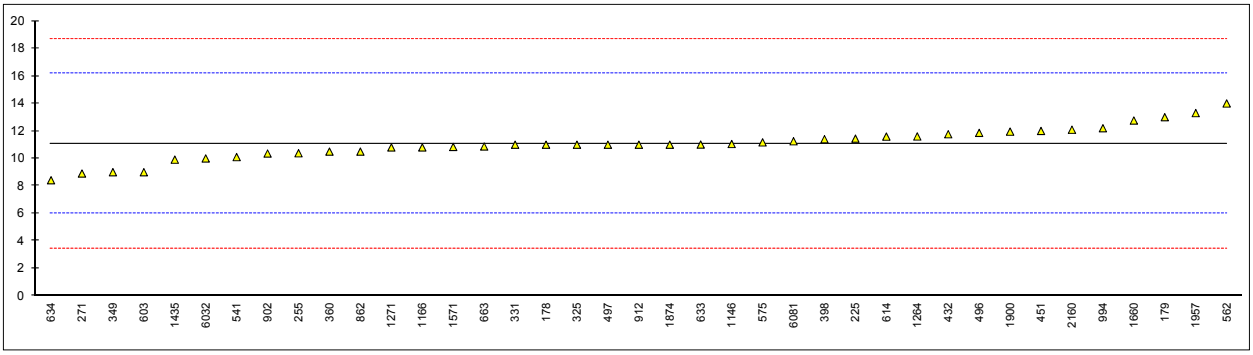
lab	method	value	mark	z(targ)	remarks
178	D5185	13		0.06	
179	D5185	13		0.06	
214		-----		-----	
225	D6595	14.05		0.79	
237		-----		-----	
255	INH-01	12.52		-0.27	
271	D5185	12.333		-0.40	
311		-----		-----	
325	D5185	14		0.75	
331	D5185mod.	13.3		0.27	
349	D5185	11		-1.33	
360	D5185	12.6		-0.22	
398	D5185	15.0		1.45	
432	D4951	13.47		0.39	
442		-----		-----	
451	D5185	12		-0.64	
473		-----		-----	
496	D5185	14.26		0.94	
497	D5185	12.88		-0.02	
541	D5185	12.4		-0.36	
550		-----		-----	
562	D6595	15.30		1.66	
575	D6595	11.68		-0.86	
603	D5185	12		-0.64	
614	D5185	13.46		0.38	
621		-----		-----	
633	D6595	12.134		-0.54	
634		-----		-----	
663	D5185	12.93		0.01	
780	D5185	13		0.06	
862	D5185	12.8		-0.08	
902	D5185	12.72		-0.14	
912	D5185	13		0.06	
962		-----		-----	
963		-----		-----	
994	D5185	13.2		0.20	
1146	In house	12.70		-0.15	
1161		-----		-----	
1166	In house	12.085	C	-0.58	first reported: 1.820
1264	D6595	11.4		-1.05	
1271	D5185	13.2		0.20	
1297	D5708	13.0255		0.08	
1372		-----		-----	
1435	D5185	12.54		-0.26	
1531		-----		-----	
1571	D5185	13.0741		0.11	
1660	D5185	14.64		1.20	
1748		-----		-----	
1874	D6595	12.36		-0.39	
1900	D5185	14.592		1.17	
1920		-----		-----	
1957	D5185	11.7		-0.84	
2160		-----		-----	
6016		-----		-----	
6032	D6595	11.04		-1.30	
6056		-----		-----	
6081		13.28		0.25	
	normality	OK			
	n	39			
	outliers	0			
	mean (n)	12.915			
	st.dev. (n)	1.0010			
	R(calc.)	2.803			
	R(D5185:13e1)	4.026			Application range: 2 – 140 mg/kg


19
17
15
13
11
9
7
5
349
6032
1264
575
1957
451
603
1166
633
271
1874
541
255
1435
360
1146
902
862
497
663
179
178
780
912
1297
1571
994
1271
6081
331
614
432
325
225
496
1900
1660
398
562


Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
5
10
15
20

Determination of Lead (Pb) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		-0.03	
179	D5185	13		0.76	
214		-----		-----	
225	D6595	11.44		0.14	
237		-----		-----	
255	INH-01	10.38		-0.27	
271	D5185	8.903		-0.85	
311		-----		-----	
325	D5185	11		-0.03	
331	D5185mod.	11.0		-0.03	
349	D5185	9		-0.81	
360	D5185	10.5		-0.22	
398	D5185	11.4		0.13	
432	D4951	11.76		0.27	
442		-----		-----	
451	D5185	12		0.36	
473		-----		-----	
496	D5185	11.86		0.31	
497	D5185	11		-0.03	
541	D5185	10.1		-0.38	
550		-----		-----	
562	D6595	14.00		1.15	
575	D6595	11.17		0.04	
603	D5185	9		-0.81	
614	D5185	11.59		0.20	
621		-----		-----	
633	D6595	11.01		-0.02	
634	D6595	8.415		-1.04	
663	D5185	10.87		-0.08	
780		-----		-----	
862	D5185	10.5		-0.22	
902	D5185	10.36		-0.28	
912	D5185	11		-0.03	
962		-----		-----	
963		-----		-----	
994	D5185	12.2		0.44	
1146	In house	11.05		-0.01	
1161		-----		-----	
1166	In house	10.802	C	-0.11	first reported: 0.320
1264	D6595	11.6		0.21	
1271	D5185	10.8		-0.11	
1297		-----		-----	
1372		-----		-----	
1435	D5185	9.914		-0.45	
1531		-----		-----	
1571	D5185	10.8375		-0.09	
1660	D5185	12.76		0.66	
1748		-----		-----	
1874	D6595	11.0		-0.03	
1900	D5185	11.952		0.35	
1920		-----		-----	
1957	D5185	13.3		0.87	
2160	D6052	12.09		0.40	
6016		-----		-----	
6032	D6595	10		-0.42	
6056		-----		-----	
6081		11.25		0.07	
	normality	OK			
	n	39			
	outliers	0			
	mean (n)	11.072			
	st.dev. (n)	1.1662			
	R(calc.)	3.265			
	R(D5185:13e1)	7.129			Application range: 10 – 160 mg/kg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4
2
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634
271
349
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1435
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255
360
862
1271
1166
1571
663
331
178
325
497
912
1874
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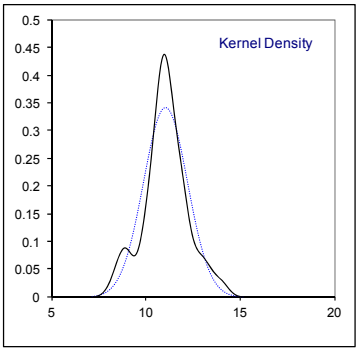
1146
575
6081
398
225
614
1264
432
496
1900
451
2160
994
1660
179
1957
562


Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5
10
15
20

Determination of Lithium (Li) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179	D5185	<1		-----	
214		-----		-----	
225		-----		-----	
237		-----		-----	
255		-----		-----	
271		-----		-----	
311		-----		-----	
325		-----		-----	
331	D5185mod.	<1		-----	
349	D5185	3	C	-----	first reported: 6
360		-----		-----	
398		-----		-----	
432		-----		-----	
442		-----		-----	
451	D5185	0		-----	
473		-----		-----	
496	D5185	0.20		-----	
497		-----		-----	
541		-----		-----	
550		-----		-----	
562		-----		-----	
575		-----		-----	
603		-----		-----	
614	D5185	<1		-----	
621		-----		-----	
633	D6595	0.000		-----	
634		-----		-----	
663		-----		-----	
780		-----		-----	
862	D5185	<1		-----	
902	D5185	0.404		-----	
912		-----		-----	
962		-----		-----	
963		-----		-----	
994		-----		-----	
1146	In house	0.1253		-----	
1161		-----		-----	
1166		-----		-----	
1264	D6595	0		-----	
1271		-----		-----	
1297		-----		-----	
1372		-----		-----	
1435	D5185	0.0171		-----	
1531		-----		-----	
1571		-----		-----	
1660		-----		-----	
1748		-----		-----	
1874	D6595	0		-----	
1900		-----		-----	
1920		-----		-----	
1957	D5185	2.1	C	-----	first reported: 9.9
2160		-----		-----	
6016		-----		-----	
6032		-----		-----	
6056		-----		-----	
6081		-----		-----	
	normality	not OK			
	n	10			
	outliers	0			
	mean (n)	0.585			
	st.dev. (n)	1.0652			
	R(calc.)	2.982			
	R(Horwitz)	(0.284)			

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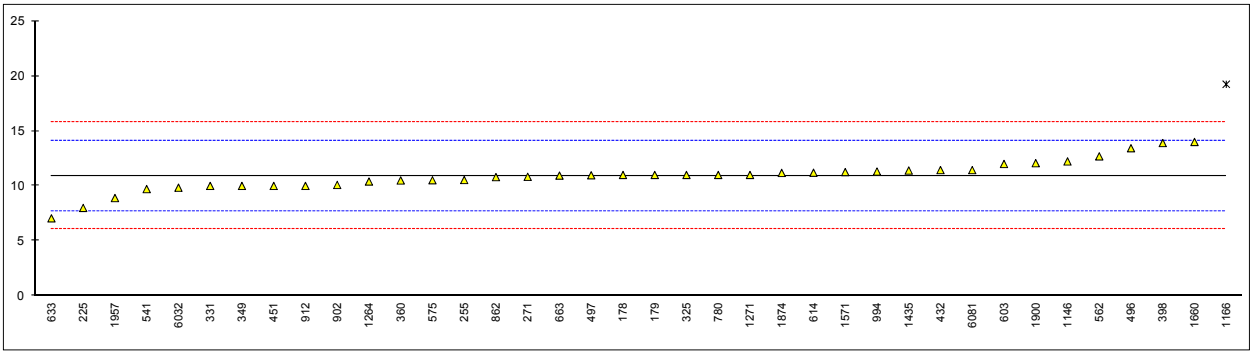
Determination of Magnesium (Mg) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.06	
179	D5185	11		0.06	
214		-----		-----	
225	D6595	8.00		-1.80	
237		-----		-----	
255	INH-01	10.54		-0.23	
271	D5185	10.830		-0.05	
311		-----		-----	
325	D5185	11		0.06	
331	D5185mod.	10.0		-0.56	
349	D5185	10		-0.56	
360	D5185	10.50		-0.25	
398	D5185	13.9		1.85	
432	D4951	11.44		0.33	
442		-----		-----	
451	D5185	10		-0.56	
473		-----		-----	
496	D5185	13.43		1.56	
497	D5185	10.97		0.04	
541	D5185	9.713		-0.74	
550		-----		-----	
562	D6595	12.69		1.10	
575	D6595	10.52		-0.24	
603	D5185	12		0.67	
614	D5185	11.2		0.18	
621		-----		-----	
633	D6595	7.055		-2.38	
634		-----		-----	
663	D5185	10.94		0.02	
780	D5185	11.0		0.06	
862	D5185	10.8		-0.07	
902	D5185	10.09		-0.51	
912	D5185	10		-0.56	
962		-----		-----	
963		-----		-----	
994	D5185	11.31		0.25	
1146	In house	12.23		0.82	
1161		-----		-----	
1166	In house	19.244	C,R(0.01)	5.15	first reported: 9.624
1264	D6595	10.4		-0.31	
1271	D5185	11		0.06	
1297		-----		-----	
1372		-----		-----	
1435	D5185	11.40		0.30	
1531		-----		-----	
1571	D5185	11.2583		0.22	
1660	D5185	14.00		1.91	
1748		-----		-----	
1874	D6595	11.18		0.17	
1900	D5185	12.072		0.72	
1920		-----		-----	
1957	D5185	8.9		-1.24	
2160		-----		-----	
6016		-----		-----	
6032	D6595	9.84		-0.66	
6056		-----		-----	
6081		11.44		0.33	
	normality	suspect			
	n	37			
	outliers	1			
	mean (n)	10.909			
	st.dev. (n)	1.3768			
	R(calc.)	3.855			
	R(D5185:13e1)	4.534			Application range: 5 – 1700 mg/kg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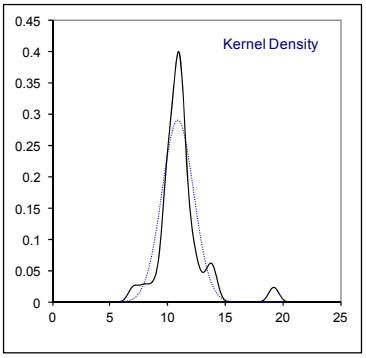
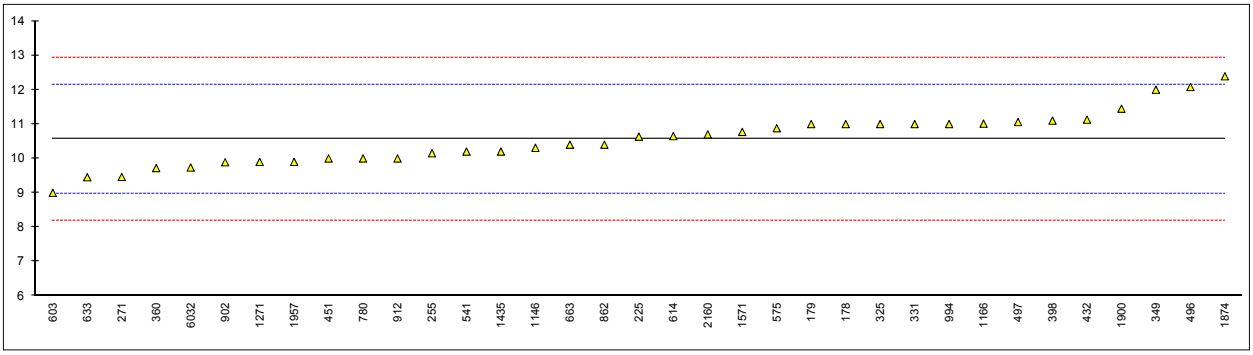
20
15
10
5
0
633
225
1957
541
6032
331
349
451
912
902
1264
360
575
255
862
271
663
497
178
179
325
780
1271
1874
614
1571
994
1435
432
6081
603
1900
1146
562
496
398
1660
1166


Kernel Density
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
5
10
15
20
25

Determination of Manganese (Mn) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.56	
179	D5185	11		0.56	
214		-----		-----	
225	D6595	10.634		0.10	
237		-----		-----	
255	INH-01	10.15		-0.52	
271	D5185	9.462		-1.40	
311		-----		-----	
325	D5185	11		0.56	
331	D5185mod.	11.0		0.56	
349	D5185	12		1.83	
360	D5185	9.72		-1.07	
398	D5185	11.1		0.69	
432	D4951	11.13		0.73	
442		-----		-----	
451	D5185	10		-0.71	
473		-----		-----	
496	D5185	12.08		1.94	
497	D5185	11.06		0.64	
541	D5185	10.2		-0.46	
550		-----		-----	
562		-----		-----	
575	D6595	10.88		0.41	
603	D5185	9		-1.99	
614	D5185	10.65		0.12	
621		-----		-----	
633	D6595	9.453		-1.41	
634		-----		-----	
663	D5185	10.40		-0.20	
780	D5185	10		-0.71	
862	D5185	10.4		-0.20	
902	D5185	9.889		-0.85	
912	D5185	10		-0.71	
962		-----		-----	
963		-----		-----	
994	D5185	11.0		0.56	
1146	In house	10.31		-0.32	
1161		-----		-----	
1166	In house	11.012	C	0.58	first reported: 0.490
1264		-----		-----	
1271	D5185	9.9		-0.84	
1297		-----		-----	
1372		-----		-----	
1435	D5185	10.20		-0.46	
1531		-----		-----	
1571	D5185	10.7716		0.27	
1660		-----		-----	
1748		-----		-----	
1874	D6595	12.39		2.33	
1900	D5185	11.447		1.13	
1920		-----		-----	
1957	D5185	9.9		-0.84	
2160	In house	10.70		0.18	
6016		-----		-----	
6032	D6595	9.736		-1.05	
6056		-----		-----	
6081		-----		-----	
	normality	OK			
	n	35			
	outliers	0			
	mean (n)	10.559			
	st.dev. (n)	0.7630			
	R(calc.)	2.136			
	R(D5185:13e1)	2.199			Application range: 5 – 700 mg/kg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603
633
271
360
6032
902
1271
1957
451
780
912
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541
1435
1146
663
862
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1571
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179
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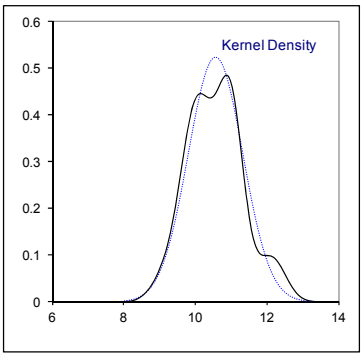
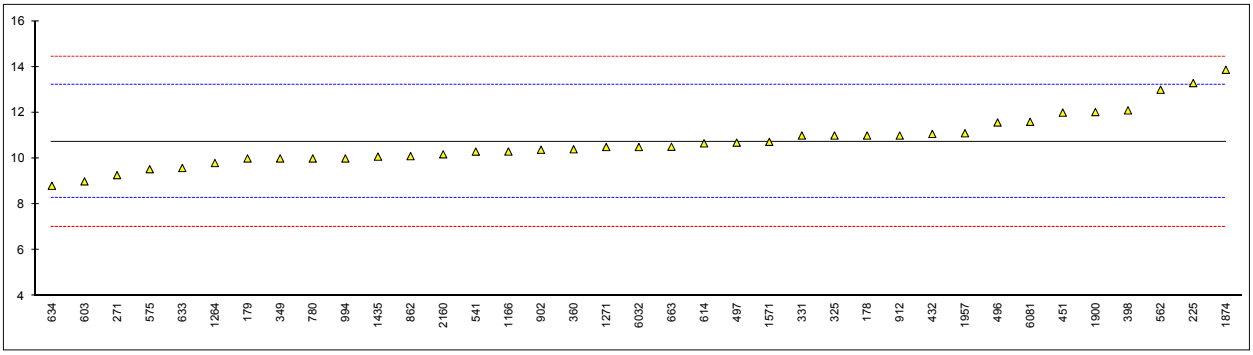
325
331
994
1166
497
398
432
1900
349
496
1874


Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
6
8
10
12
14

Determination of Molybdenum (Mo) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.22	
179	D5185	10		-0.59	
214		-----		-----	
225	D6595	13.29		2.08	
237		-----		-----	
255		-----		-----	
271	D5185	9.272		-1.18	
311		-----		-----	
325	D5185	11		0.22	
331	D5185mod.	11.0		0.22	
349	D5185	10		-0.59	
360	D5185	10.4		-0.27	
398	D5185	12.1		1.11	
432	D4951	11.07		0.28	
442		-----		-----	
451	D5185	12		1.03	
473		-----		-----	
496	D5185	11.57		0.68	
497	D5185	10.69		-0.03	
541	D5185	10.3		-0.35	
550		-----		-----	
562	D6595	13.00		1.84	
575	D6595	9.53		-0.97	
603	D5185	9		-1.40	
614	D5185	10.66		-0.06	
621		-----		-----	
633	D6595	9.582		-0.93	
634	D6595	8.810		-1.56	
663	D5185	10.51		-0.18	
780	D5185	10		-0.59	
862	D5185	10.1		-0.51	
902	D5185	10.38		-0.28	
912	D5185	11		0.22	
962		-----		-----	
963		-----		-----	
994	D5185	10.0		-0.59	
1146		-----		-----	
1161		-----		-----	
1166	In house	10.302	C	-0.35	first reported: <1
1264	D6595	9.8		-0.75	
1271	D5185	10.5		-0.19	
1297		-----		-----	
1372		-----		-----	
1435	D5185	10.08		-0.53	
1531		-----		-----	
1571	D5185	10.7259		0.00	
1660	D5185	<2		<-7.08	possibly a false negative test result?
1748		-----		-----	
1874	D6595	13.87		2.55	
1900	D5185	12.026		1.05	
1920		-----		-----	
1957	D5185	11.1		0.30	
2160	In house	10.18		-0.44	
6016		-----		-----	
6032	D6595	10.5		-0.19	
6056		-----		-----	
6081		11.6		0.71	

	normality	suspect	
	n	37	
	outliers	0	
	mean (n)	10.728	
	st.dev. (n)	1.1203	
	R(calc.)	3.137	
	R(D5185:13e1)	3.450	Application range: 5 – 200 mg/kg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8
6
4
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1264
179
349
780
994
1435
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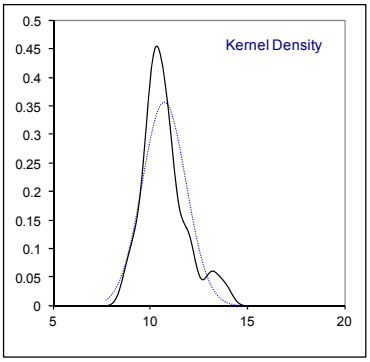
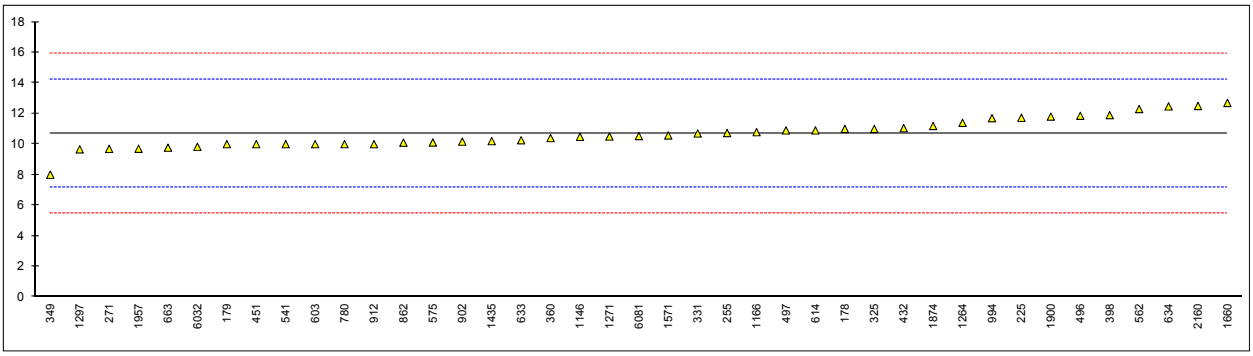
541
1166
902
360
1271
6032
663
614
497
1571
331
325
178
912
432
1957
496
6081
451
1900
398
562
225
1874


Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5
10
15
20

Determination of Nickel (Ni) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.17	
179	D5185	10		-0.40	
214		-----		-----	
225	D6595	11.73		0.59	
237		-----		-----	
255	INH-01	10.73		0.02	
271	D5185	9.695		-0.57	
311		-----		-----	
325	D5185	11		0.17	
331	D5185mod.	10.7		0.00	
349	D5185	8		-1.54	
360	D5185	10.4		-0.17	
398	D5185	11.9		0.69	
432	D4951	11.05		0.20	
442		-----		-----	
451	D5185	10		-0.40	
473		-----		-----	
496	D5185	11.86		0.66	
497	D5185	10.90		0.12	
541	D5185	10.0		-0.40	
550		-----		-----	
562	D6595	12.30		0.91	
575	D6595	10.11		-0.34	
603	D5185	10		-0.40	
614	D5185	10.9		0.12	
621		-----		-----	
633	D6595	10.257		-0.25	
634	D6595	12.472		1.01	
663	D5185	9.77		-0.53	
780	D5185	10		-0.40	
862	D5185	10.1		-0.34	
902	D5185	10.17		-0.30	
912	D5185	10		-0.40	
962		-----		-----	
963		-----		-----	
994	D5185	11.7		0.57	
1146	In house	10.48		-0.12	
1161		-----		-----	
1166	In house	10.785	C	0.05	first reported: 0.467
1264	D6595	11.4		0.40	
1271	D5185	10.5		-0.11	
1297	D5708	9.6605		-0.59	
1372		-----		-----	
1435	D5185	10.20		-0.28	
1531		-----		-----	
1571	D5185	10.5723		-0.07	
1660	D5185	12.7		1.14	
1748		-----		-----	
1874	D6595	11.19		0.28	
1900	D5185	11.807		0.63	
1920		-----		-----	
1957	D5185	9.7		-0.57	
2160	In house	12.50		1.03	
6016		-----		-----	
6032	D6595	9.83		-0.50	
6056		-----		-----	
6081		10.53		-0.10	
	normality	OK			
	n	41			
	outliers	0			
	mean (n)	10.698			
	st.dev. (n)	0.9583			
	R(calc.)	2.683			
	R(D5185:13e1)	4.906			Application range: 5 – 40 mg/kg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16
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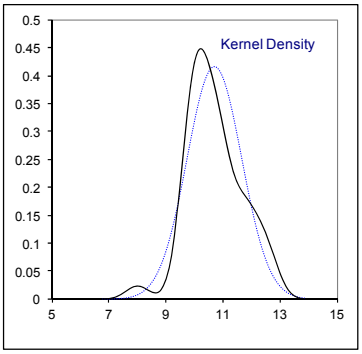
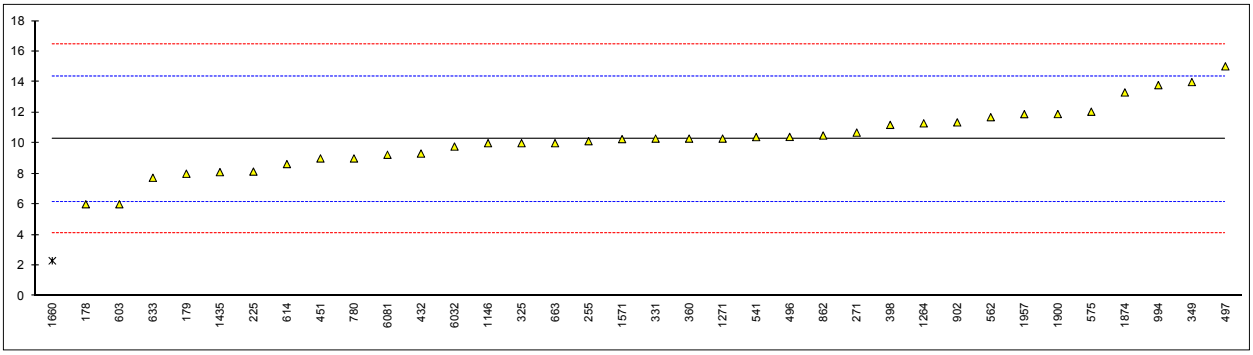
12
10
8
6
4
2
0
349
1297
271
1957
663
6032
179
451
541
603
780
912
862
575
902
1435
633
360
1146
1271
6081
1571
331
255
1166
497
614
178
325
432
1874
1264
994
225
1900
496
398
562
634
2160
1660


Kernel Density
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5
7
9
11
13
15

Determination of Sodium (Na) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	6		-2.08	
179	D5185	8		-1.11	
214		-----		-----	
225	D6595	8.14		-1.04	
237		-----		-----	
255	INH-01	10.13		-0.07	
271	D5185	10.691		0.20	
311		-----		-----	
325	D5185	10		-0.14	
331	D5185mod.	10.3		0.01	
349	D5185	14		1.81	
360	D5185	10.3		0.01	
398	D5185	11.2		0.45	
432	D4951	9.32		-0.47	
442		-----		-----	
451	D5185	9		-0.62	
473		-----		-----	
496	D5185	10.41		0.06	
497	D5185	15.03		2.31	
541	D5185	10.4		0.06	
550		-----		-----	
562	D6595	11.70		0.69	
575	D6595	12.06		0.87	
603	D5185	6		-2.08	
614	D5185	8.63		-0.80	
621		-----		-----	
633	D6595	7.735		-1.24	
634		-----		-----	
663	D5185	10.00		-0.14	
780	D5185	9		-0.62	
862	D5185	10.5		0.11	
902	D5185	11.36		0.53	
912		-----		-----	
962		-----		-----	
963		-----		-----	
994	D5185	13.8		1.71	
1146	In house	9.999		-0.14	
1161		-----		-----	
1166		-----		-----	
1264	D6595	11.3		0.50	
1271	D5185	10.3		0.01	
1297		-----		-----	
1372		-----		-----	
1435	D5185	8.104		-1.06	
1531		-----		-----	
1571	D5185	10.2662		-0.01	
1660	D5185	2.3	R(0.05)	-3.88	
1748		-----		-----	
1874	D6595	13.32		1.48	
1900	D5185	11.905		0.79	
1920		-----		-----	
1957	D5185	11.9		0.79	
2160		-----		-----	
6016		-----		-----	
6032	D6595	9.778		-0.24	
6056		-----		-----	
6081		9.241		-0.51	
	normality	OK			
	n	35			
	outliers	1			
	mean (n)	10.281			
	st.dev. (n)	2.0141			
	R(calc.)	5.639			
	R(D5185:13e1)	5.753			Application range: 7 – 70 mg/kg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1660
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432
6032
1146
325
663
255
1571
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541
496
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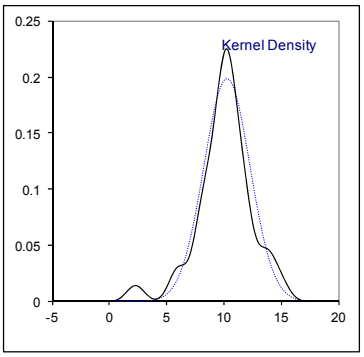
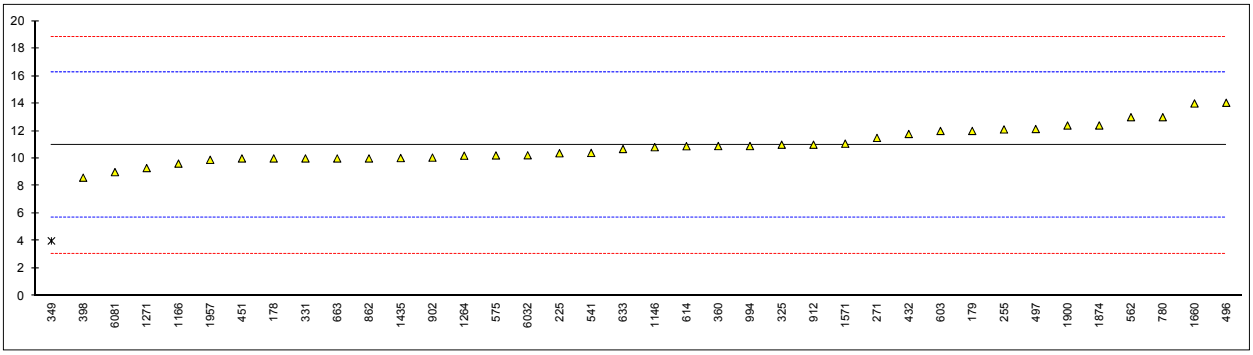
1264
902
562
1957
1900
575
1874
994
349
497


Kernel Density
0.25
0.2
0.15
0.1
0.05
0
-5
0
5
10
15
20

Determination of Silicon (Si) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	10		-0.37	
179	D5185	12		0.39	
214		-----		-----	
225	D6595	10.38		-0.22	
237		-----		-----	
255	INH-01	12.11		0.44	
271	D5185	11.493		0.20	
311		-----		-----	
325	D5185	11		0.01	
331	D5185mod.	10.0		-0.37	
349	D5185	4	C,R(0.01)	-2.64	first reported: 0
360	D5185	10.9		-0.02	
398	D5185	8.6		-0.90	
432	D4951	11.78		0.31	
442		-----		-----	
451	D5185	10		-0.37	
473		-----		-----	
496	D5185	14.05		1.17	
497	D5185	12.14		0.45	
541	D5185	10.4		-0.21	
550		-----		-----	
562	D6595	13.00		0.77	
575	D6595	10.22		-0.28	
603	D5185	12		0.39	
614	D5185	10.89		-0.03	
621		-----		-----	
633	D6595	10.685		-0.11	
634		-----		-----	
663	D5185	10.00		-0.37	
780	D5185	13		0.77	
862	D5185	10.0		-0.37	
902	D5185	10.06		-0.34	
912	D5185	11		0.01	
962		-----		-----	
963		-----		-----	
994	D5185	10.9		-0.02	
1146	In house	10.82		-0.05	
1161		-----		-----	
1166	In house	9.626	C	-0.51	first reported: 0.291
1264	D6595	10.2		-0.29	
1271	D5185	9.3		-0.63	
1297		-----		-----	
1372		-----		-----	
1435	D5185	10.03		-0.35	
1531		-----		-----	
1571	D5185	11.0752		0.04	
1660	D5185	14.00		1.15	
1748		-----		-----	
1874	D6595	12.4		0.55	
1900	D5185	12.398		0.54	
1920		-----		-----	
1957	D5185	9.9		-0.40	
2160		-----		-----	
6016		-----		-----	
6032	D6595	10.23		-0.28	
6056		-----		-----	
6081		9.006		-0.74	
	normality	OK			
	n	37			
	outliers	1			
	mean (n)	10.962			
	st.dev. (n)	1.3001			
	R(calc.)	3.640			
	R(D5185:13e1)	7.378			Application range: 8 – 50 mg/kg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4
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398
6081
1271
1166
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451
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331
663
862
1435
902
1264
575
6032
225
541
633
1146
614
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994
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912
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271
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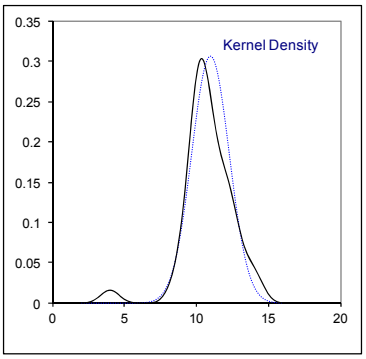
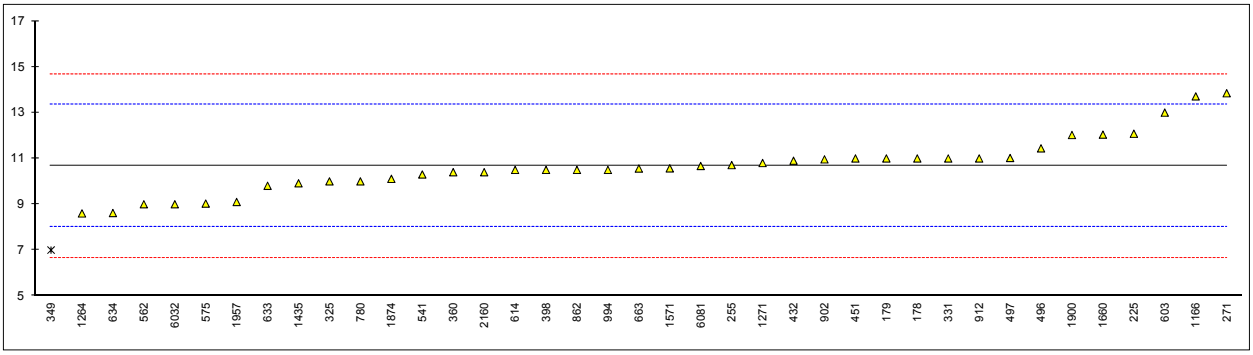
603
179
255
497
1900
1874
562
780
1660
496


Kernel Density
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
5
10
15
20

Determination of Silver (Ag) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.24	
179	D5185	11		0.24	
214		-----		-----	
225	D6595	12.08		1.05	
237		-----		-----	
255	INH-01	10.71		0.03	
271	D5185	13.845		2.38	
311		-----		-----	
325	D5185	10		-0.51	
331	D5185mod.	11.0		0.24	
349	D5185	7	C,R(0.05)	-2.75	first reported: 1
360	D5185	10.4		-0.21	
398	D5185	10.5		-0.13	
432	D4951	10.90		0.17	
442		-----		-----	
451	D5185	11		0.24	
473		-----		-----	
496	D5185	11.44		0.57	
497	D5185	11.02		0.26	
541	D5185	10.3		-0.28	
550		-----		-----	
562	D6595	9.00		-1.25	
575	D6595	9.03		-1.23	reported: test value out of application range of D6595
603	D5185	13		1.74	
614	D5185	10.5		-0.13	
621		-----		-----	
633	D6595	9.806		-0.65	
634	D6595	8.618		-1.54	
663	D5185	10.56		-0.09	
780	D5185	10		-0.51	
862	D5185	10.5		-0.13	
902	D5185	10.96		0.21	
912	D5185	11		0.24	
962		-----		-----	
963		-----		-----	
994	D5185	10.5		-0.13	
1146		-----		-----	
1161		-----		-----	
1166	In house	13.709	C	2.27	first reported: 3.135
1264	D6595	8.6		-1.55	
1271	D5185	10.8		0.09	
1297		-----		-----	
1372		-----		-----	
1435	D5185	9.916		-0.57	
1531		-----		-----	
1571	D5185	10.5676		-0.08	
1660	D5185	12.04		1.02	
1748		-----		-----	
1874	D6595	10.11		-0.42	
1900	D5185	12.023		1.01	
1920		-----		-----	
1957	D5185	9.1		-1.18	
2160	In house	10.40		-0.21	
6016		-----		-----	
6032	D6595	9		-1.25	
6056		-----		-----	
6081		10.67		0.00	
	normality	suspect			
	n	38			
	outliers	1			
	mean (n)	10.674			
	st.dev. (n)	1.2084			
	R(calc.)	3.384			
	R(D5185:13e1)	3.736			Application range: 0.5 – 50 mg/kg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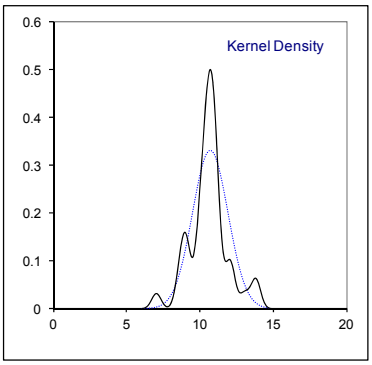
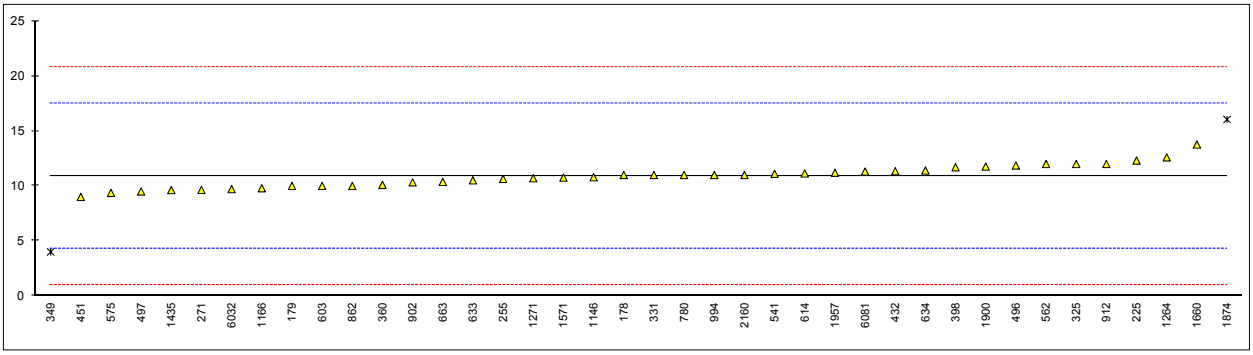
15
13
11
9
7
5
349
1264
634
562
6032
575
1957
633
1435
325
780
1874
541
360
2160
614
398
862
994
663
1571
6081
255
1271
432
902
451
179
178
331
912
497
496
1900
1660
225
603
1166
271


Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20

Determination of Tin (Sn) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.04	
179	D5185	10		-0.27	
214		-----		-----	
225	D6595	12.31		0.43	
237		-----		-----	
255	INH-01	10.64		-0.07	
271	D5185	9.640		-0.38	
311		-----		-----	
325	D5185	12		0.34	
331	D5185mod.	11.0		0.04	
349	D5185	4	C,R(0.01)	-2.09	first reported: 0
360	D5185	10.1		-0.24	
398	D5185	11.7		0.25	
432	D4951	11.34		0.14	
442		-----		-----	
451	D5185	9		-0.57	
473		-----		-----	
496	D5185	11.86		0.30	
497	D5185	9.50		-0.42	
541	D5185	11.1		0.07	
550		-----		-----	
562	D6595	12.00		0.34	
575	D6595	9.37		-0.46	reported: test value out of application range of D6595
603	D5185	10		-0.27	
614	D5185	11.14		0.08	
621		-----		-----	
633	D6595	10.511		-0.11	
634	D6595	11.403		0.16	
663	D5185	10.37		-0.15	
780	D5185	11		0.04	
862	D5185	10.0		-0.27	
902	D5185	10.33		-0.17	
912	D5185	12		0.34	
962		-----		-----	
963		-----		-----	
994	D5185	11.0		0.04	
1146	In house	10.79		-0.03	
1161		-----		-----	
1166	In house	9.791	C	-0.33	first reported: <5
1264	D6595	12.6		0.52	
1271	D5185	10.7		-0.05	
1297		-----		-----	
1372		-----		-----	
1435	D5185	9.626		-0.38	
1531		-----		-----	
1571	D5185	10.7610		-0.04	
1660	D5185	13.77		0.88	
1748		-----		-----	
1874	D6595	16.04	R(0.01)	1.57	
1900	D5185	11.762		0.27	
1920		-----		-----	
1957	D5185	11.2		0.10	
2160	In house	11.00		0.04	
6016		-----		-----	
6032	D6595	9.71		-0.35	
6056		-----		-----	
6081		11.31		0.13	
	normality	OK			
	n	38			
	outliers	2			
	mean (n)	10.877			
	st.dev. (n)	1.0083			
	R(calc.)	2.823			
	R(D5185:13e1)	9.223			Application range: 10 – 40 mg/kg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20
15
10
5
0
349
451
575
497
1435
271
6032
1166
179
603
862
360
902
663
633
255
1271
1571
1146
178
331
780
994
2160
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614
1957
6081
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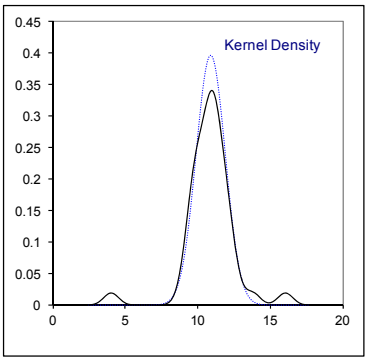
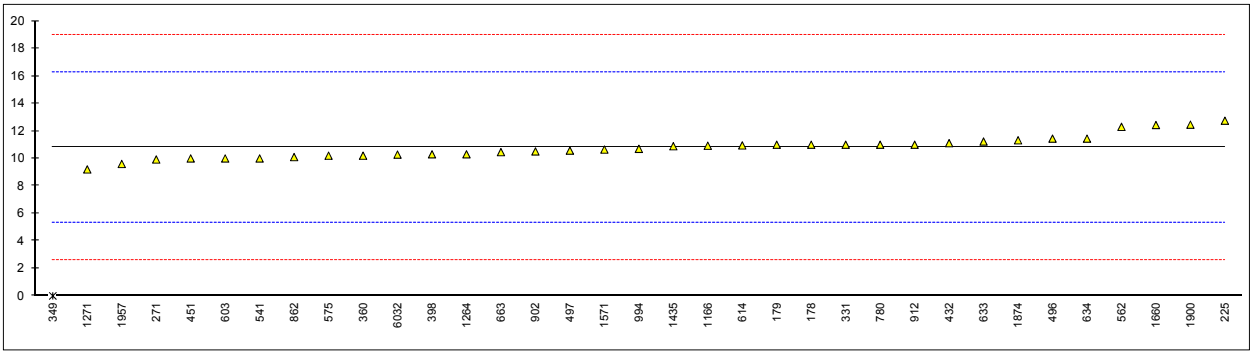
398
1900
496
562
325
912
225
1264
1660
1874


Kernel Density
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
5
10
15
20

Determination of Titanium (Ti) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.07	
179	D5185	11		0.07	
214		-----		-----	
225	D6595	12.745		0.71	
237		-----		-----	
255		-----		-----	
271	D5185	9.925		-0.32	
311		-----		-----	
325		-----		-----	
331	D5185mod.	11.0		0.07	
349	D5185	0	R(0.01)	-3.95	
360	D5185	10.2		-0.22	
398	D5185	10.3		-0.18	
432	D4951	11.11		0.11	
442		-----		-----	
451	D5185	10		-0.29	
473		-----		-----	
496	D5185	11.44		0.23	
497	D5185	10.57		-0.08	
541	D5185	10.0		-0.29	
550		-----		-----	
562	D6595	12.30		0.55	
575	D6595	10.20		-0.22	
603	D5185	10		-0.29	
614	D5185	10.95		0.05	
621		-----		-----	
633	D6595	11.232		0.16	
634	D6595	11.440		0.23	
663	D5185	10.46		-0.12	
780	D5185	11		0.07	
862	D5185	10.1		-0.26	
902	D5185	10.51		-0.11	
912	D5185	11		0.07	
962		-----		-----	
963		-----		-----	
994	D5185	10.7		-0.04	
1146		-----		-----	
1161		-----		-----	
1166	In house	10.926	C	0.05	first reported: 0.464
1264	D6595	10.3		-0.18	
1271	D5185	9.2		-0.59	
1297		-----		-----	
1372		-----		-----	
1435	D5185	10.89		0.03	
1531		-----		-----	
1571	D5185	10.64755		-0.06	
1660	D5185	12.43		0.60	
1748		-----		-----	
1874	D6595	11.32		0.19	
1900	D5185	12.457		0.61	
1920		-----		-----	
1957	D5185	9.6		-0.44	
2160		-----		-----	
6016		-----		-----	
6032	D6595	10.28		-0.19	
6056		-----		-----	
6081		-----		-----	
	normality	OK			
	n	34			
	outliers	1			
	mean (n)	10.801			
	st.dev. (n)	0.8166			
	R(calc.)	2.287			
	R(D5185:13e1)	7.650			Application range: 5 – 40 mg/kg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18
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14
12
10
8
6
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2
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349
1271
1957
271
451
603
541
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575
360
6032
398
1264
663
902
497
1571
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1435
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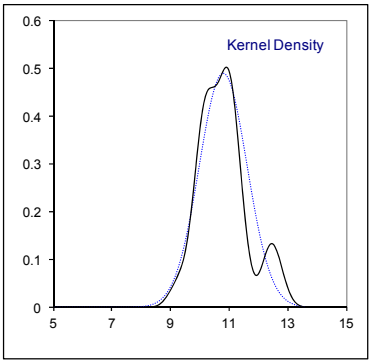
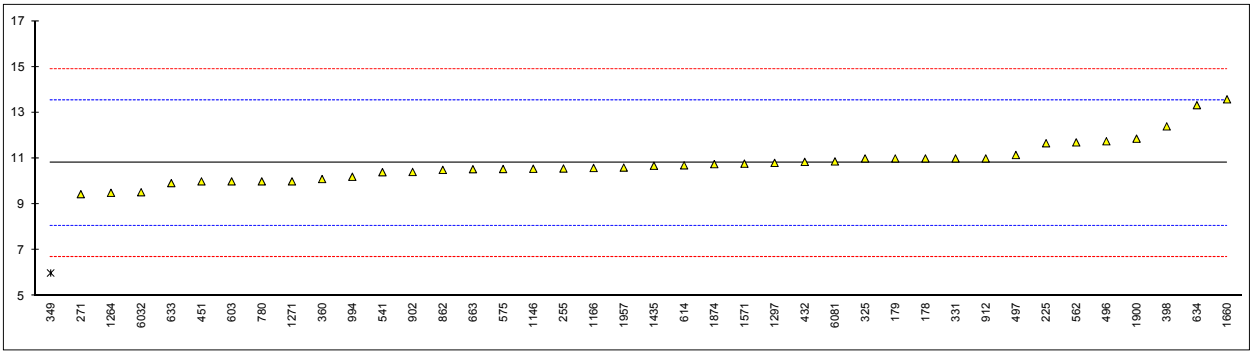
912
432
633
1874
496
634
562
1660
1900
225


Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
5
7
9
11
13
15

Determination of Vanadium (V) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	11		0.15	
179	D5185	11		0.15	
214		-----		-----	
225	D6595	11.664		0.63	
237		-----		-----	
255	INH-01	10.56		-0.18	
271	D5185	9.440		-0.99	
311		-----		-----	
325	D5185	11		0.15	
331	D5185mod.	11.0		0.15	
349	D5185	6	C,R(0.01)	-3.50	first reported: 0
360	D5185	10.1		-0.51	
398	D5185	12.4		1.17	
432	D4951	10.85		0.04	
442		-----		-----	
451	D5185	10		-0.58	
473		-----		-----	
496	D5185	11.75		0.69	
497	D5185	11.15		0.26	
541	D5185	10.4		-0.29	
550		-----		-----	
562	D6595	11.70		0.66	
575	D6595	10.54		-0.19	
603	D5185	10		-0.58	
614	D5185	10.7		-0.07	
621		-----		-----	
633	D6595	9.923		-0.64	
634	D6595	13.325		1.84	
663	D5185	10.53		-0.20	
780	D5185	10		-0.58	
862	D5185	10.5		-0.22	
902	D5185	10.41		-0.29	
912	D5185	11		0.15	
962		-----		-----	
963		-----		-----	
994	D5185	10.2		-0.44	
1146	In house	10.55		-0.18	
1161		-----		-----	
1166	In house	10.584	C	-0.16	first reported: <1
1264	D6595	9.5		-0.95	
1271	D5185	10		-0.58	
1297	D5708	10.8055		0.00	
1372		-----		-----	
1435	D5185	10.68		-0.09	
1531		-----		-----	
1571	D5185	10.7718		-0.02	
1660	D5185	13.58		2.03	
1748		-----		-----	
1874	D6595	10.75		-0.04	
1900	D5185	11.863		0.78	
1920		-----		-----	
1957	D5185	10.6		-0.15	
2160		-----		-----	
6016		-----		-----	
6032	D6595	9.526		-0.93	
6056		-----		-----	
6081		10.87		0.05	
	normality	not OK			
	n	39			
	outliers	1			
	mean (n)	10.801			
	st.dev. (n)	0.8989			
	R(calc.)	2.517			
	R(D5185:13e1)	3.837			Application range: 1 – 50 mg/kg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1264
6032
633
451
603
780
1271
360
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862
663
575
1146
255
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1957
1435
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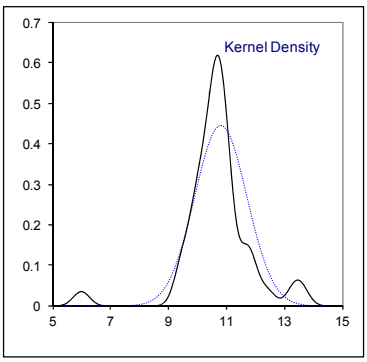
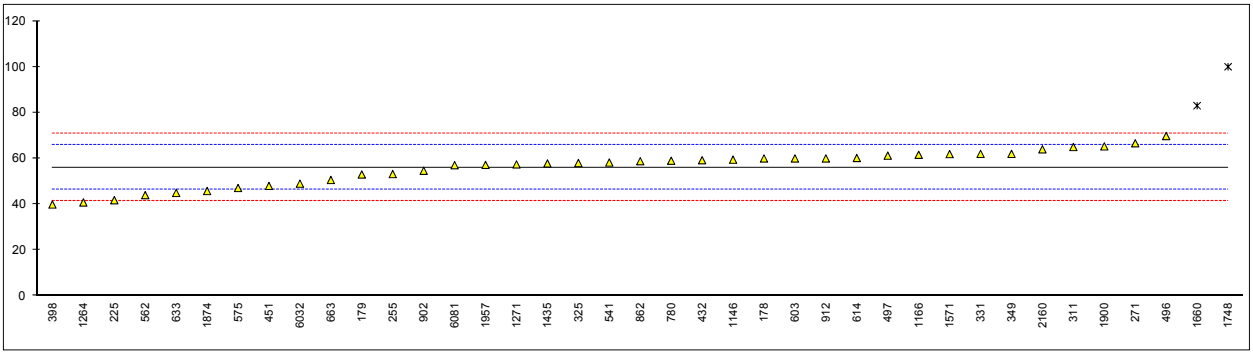
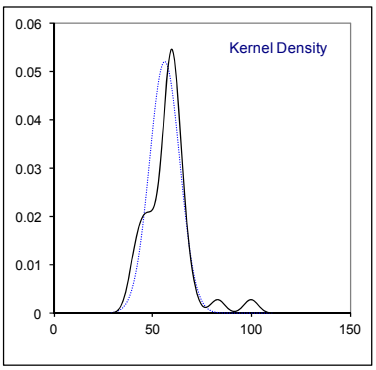

Kernel Density
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5
7
9
11
13
15

Determination of Calcium (Ca) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	60		0.80	
179	D5185	53		-0.63	
214		-----		-----	
225	D6595	41.778		-2.92	
237		-----		-----	
255	INH-01	53.18		-0.59	
271	D5185	66.615		2.16	
311	D5185	65		1.83	
325	D5185	58		0.40	
331	D5185mod.	62.0		1.21	
349	D5185	62	C	1.21	first reported: 33
360		-----		-----	
398	D5185	39.9		-3.30	
432	D4951	59.22		0.64	
442		-----		-----	
451	D5185	48		-1.65	
473		-----		-----	
496	D5185	69.77		2.80	
497	D5185	61.22		1.05	
541	D5185	58.23		0.44	
550		-----		-----	
562	D6595	44.00		-2.47	
575	D6595	47.09		-1.83	
603	D5185	60		0.80	
614	D5185	60.2		0.84	
621		-----		-----	
633	D6595	44.947	C	-2.27	first reported: 11.476
634		-----		-----	
663	D5185	50.59		-1.12	
780	D5185	59.0		0.60	
862	D5185	58.8		0.56	
902	D5185	54.62		-0.30	
912	D5185	60		0.80	
962		-----		-----	
963		-----		-----	
994		-----		-----	
1146	In house	59.47		0.70	
1161		-----		-----	
1166	In house	61.604	C	1.13	first reported: 51.790
1264	D6595	40.8		-3.12	
1271	D5185	57.4		0.27	
1297		-----		-----	
1372		-----		-----	
1435	D5185	57.83		0.36	
1531		-----		-----	
1571	D5185	61.9013		1.19	
1660	D5185	83.0	R(0.05)	5.50	
1748	D6481	100	C,R(0.01)	8.98	first reported: 80
1874	D6595	45.77		-2.10	
1900	D5185	65.275		1.88	
1920		-----		-----	
1957	D5185	57.2		0.23	
2160	In house	63.98		1.62	
6016		-----		-----	
6032	D6595	49		-1.44	
6056		-----		-----	
6081		57.07		0.21	
	normality	OK			
	n	37			
	outliers	2			
	mean (n)	56.066			
	st.dev. (n)	7.6810			
	R(calc.)	21.507			Compare R(D5185:13e1) = 2.815
	R(Horwitz)	13.702			Application range: 40 – 9000 mg/kg

Lab 633 reported 11.476 mg/kg Cadmium

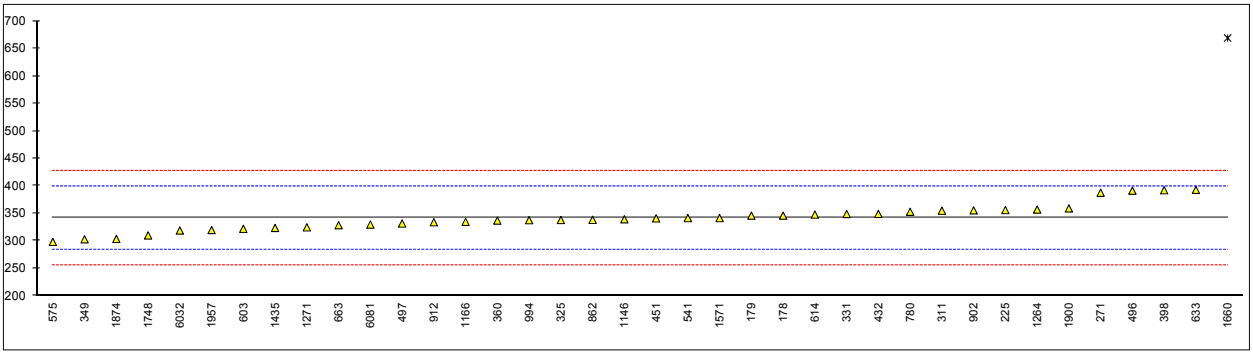

120
100
80
60
40
20
0
398
1264
225
562
633
1874
575
451
6032
663
179
255
902
6081
1957
1271
1435
325
541
862
780
432
1146
178
603
912
614
497
1166
1571
331
349
2160
311
1900
271
496
1660
1748

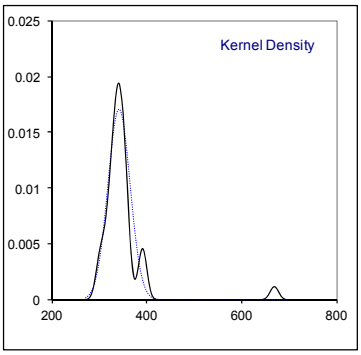

Kernel Density
0.06
0.05
0.04
0.03
0.02
0.01
0
0
50
100
150

Determination of Phosphorus (P) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	346		0.16	
179	D5185	346		0.16	
214		-----		-----	
225	D6595	356.09		0.51	
237		-----		-----	
255		-----		-----	
271	D5185	387.718		1.63	
311	D5185	355		0.48	
325	D5185	338		-0.12	
331	D5185mod.	349.0		0.26	
349	D5185	303		-1.36	
360	D5185	337		-0.16	
398	D5185	392.2		1.79	
432	D4951	349.1		0.27	
442		-----		-----	
451	D5185	341		-0.02	
473		-----		-----	
496	D5185	391.42		1.76	
497	D5185	331.7		-0.35	
541	D5185	341.6		0.00	
550		-----		-----	
562		-----		-----	
575	D6595	298.12	C	-1.53	first reported: 255.06
603	D5185	322		-0.69	
614	D5185	347.9		0.23	
621		-----		-----	
633	D6595	392.92		1.81	
634		-----		-----	
663	D5185	328.58		-0.46	
780	D5185	353		0.41	
862	D5185	338.4		-0.11	
902	D5185	355.6		0.50	
912	D5185	334		-0.26	
962		-----		-----	
963		-----		-----	
994	D5185	337.8		-0.13	
1146	In house	339.3		-0.08	
1161		-----		-----	
1166	In house	334.745	C	-0.24	first reported: 332.380
1264	D6595	357.1		0.55	
1271	D5185	324.7		-0.59	
1297		-----		-----	
1372		-----		-----	
1435	D5185	323.6		-0.63	
1531		-----		-----	
1571	D5185	341.610		0.00	
1660	D5185	669	R(0.01)	11.54	
1748	D6481	310		-1.11	
1874	D6595	303.7		-1.33	
1900	D5185	359.120		0.62	
1920		-----		-----	
1957	D5185	319.8		-0.76	
2160		-----		-----	
6016		-----		-----	
6032	D6595	319		-0.79	
6056		-----		-----	
6081		329.8		-0.41	

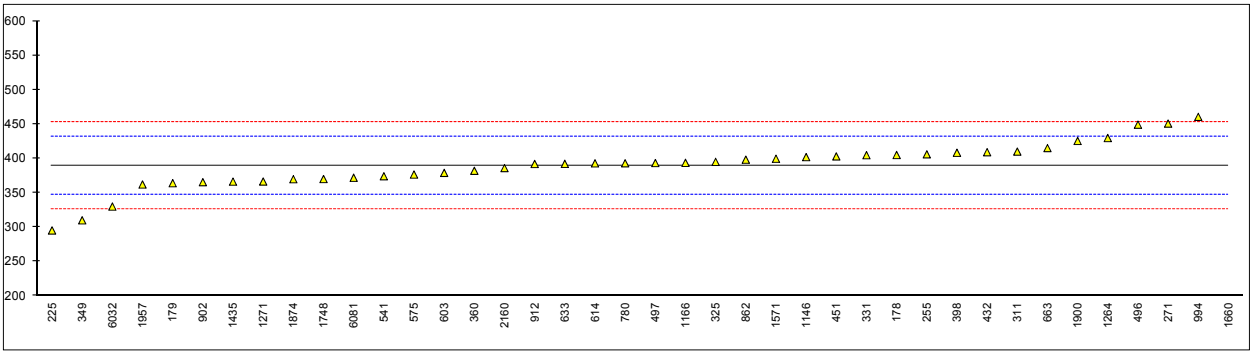
	normality	OK	
	n	37	
	outliers	1	
	mean (n)	341.503	
	st.dev. (n)	23.3488	
	R(calc.)	65.377	
	R(D5185:13e1)	79.463	Application range: 10 – 1000 mg/kg

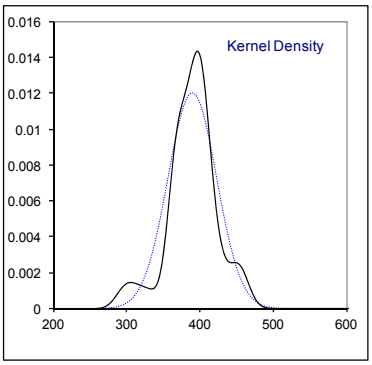

700
650
600
550
500
450
400
350
300
250
200
575 349 1874 1748 6032 1957 603 1435 1271 663 6081 497 912 1166 360 994 325 862 1146 451 541 1571 179 178 614 331 432 780 311 902 225 1264 1900 271 496 398 633 1660


Kernel Density
0.025
0.02
0.015
0.01
0.005
0
200
400
600
800

Determination of Zinc (Zn) on sample #16242; results in mg/kg.

lab	method	value	mark	z(targ)	remarks
178	D5185	405		0.73	
179	D5185	364		-1.22	
214		-----		-----	
225	D6595	295.25		-4.50	
237		-----		-----	
255	INH-01	406.00		0.78	
271	D5185	450.733		2.91	
311	D5185	410		0.97	
325	D5185	395		0.25	
331	D5185mod.	404.7		0.72	
349	D5185	310	C	-3.80	first reported: 282
360	D5185	382		-0.37	
398	D5185	408.3		0.89	
432	D4951	409.1		0.93	
442		-----		-----	
451	D5185	403		0.64	
473		-----		-----	
496	D5185	449.14		2.84	
497	D5185	393.3		0.17	
541	D5185	374.1		-0.74	
550		-----		-----	
562		-----		-----	
575	D6595	376.62		-0.62	
603	D5185	379		-0.51	
614	D5185	392.85		0.15	
621		-----		-----	
633	D6595	392.16		0.12	
634		-----		-----	
663	D5185	415.10		1.21	
780	D5185	393		0.16	
862	D5185	398.2		0.41	
902	D5185	365.5	C	-1.15	first reported: 302.9
912	D5185	392		0.11	
962		-----		-----	
963		-----		-----	
994	D5185	460.5		3.38	
1146	In house	401.9		0.58	
1161		-----		-----	
1166	In house	393.602	C	0.19	first reported: 390.259
1264	D6595	429.7		1.91	
1271	D5185	366.4		-1.11	
1297		-----		-----	
1372		-----		-----	
1435	D5185	366.3		-1.11	
1531		-----		-----	
1571	D5185	399.58		0.47	
1660	D5185	1000	R(0.01)	29.10	
1748	D6481	370		-0.94	
1874	D6595	369.8		-0.95	
1900	D5185	425.458		1.71	
1920		-----		-----	
1957	D5185	362.1		-1.31	
2160	In house	386.0		-0.18	
6016		-----		-----	
6032	D6595	330		-2.85	
6056		-----		-----	
6081		371.9		-0.85	
	normality	suspect			
	n	39			
	outliers	1			
	mean (n)	389.674			
	st.dev. (n)	33.1964			
	R(calc.)	92.950			
	R(D5185:13e1)	58.729			Application range: 60 – 1600 mg/kg


600
550
500
450
400
350
300
250
200
225
349
6032
1957
179
902
1435
1271
1874
1748
6081
541
575
603
360
2160
912
633
614
780
497
1166
325
862
1571
1146
451
331
178
255
398
432
311
663
1900
1264
496
271
994
1660


Kernel Density
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
200
300
400
500
600

APPENDIX 2

Number of participants per country

1 lab in ALGERIA
1 lab in ARGENTINA
1 lab in AUSTRALIA
1 lab in AUSTRIA
1 lab in AZERBAIJAN
2 labs in BELGIUM
1 lab in BOSNIA and HERZEGOVINA
1 lab in BRAZIL
1 lab in BULGARIA
1 lab in CHILE
1 lab in CHINA, People's Republic
1 lab in COLOMBIA
1 lab in COTE D'IVOIRE
1 lab in EGYPT
1 lab in FRANCE
2 labs in GERMANY
2 labs in GREECE
1 lab in INDIA
1 lab in INDONESIA
2 labs in ITALY
1 lab in JORDAN
1 lab in KAZAKHSTAN
3 labs in MALAYSIA
1 lab in MEXICO
2 labs in NETHERLANDS
1 lab in NIGERIA
2 labs in NORWAY
1 lab in PERU
2 labs in PHILIPPINES
1 lab in RUSSIAN FEDERATION
2 labs in SAUDI ARABIA
1 lab in SOUTH AFRICA
2 labs in SPAIN
3 labs in SWEDEN
1 lab in TANZANIA
1 lab in THAILAND
3 labs in TURKEY
1 lab in UNITED ARAB EMIRATES
2 labs in UNITED KINGDOM
2 labs in UNITED STATES OF AMERICA

APPENDIX 3

Abbreviations:

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

Literature:

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