Institute for
Interlaboratory Studies

Results of Proficiency Test
Hydraulic Oil (used)
November 2022

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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Report: iis22L10

January 2023

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1 INTRODUCTION

Since 2003 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the analysis of Hydraulic Oil (used) every year. During the annual proficiency test program 2022/2023 it was decided to continue the round robin for the analysis of Hydraulic Oil (used).

In this interlaboratory study registered for participation:
- 66 laboratories in 40 countries for regular analyzes in Hydraulic Oil (used) iis22L10
- 51 laboratories in 35 countries on the Metal analyzes iis22L10M

In total 69 laboratories in 42 countries registered for participation in one or more proficiency tests, see appendix 2 for the number of participants per country. In this report the results of the Hydraulic Oil (used) proficiency tests 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 organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory.
In this proficiency test the participants received, depending on the registration: a 1 L bottle with Hydraulic Oil (used) labelled #22211 for regular analyzes and/or a 50 mL PE bottle labelled #22212 for the analyzes of metals only.
The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, is accredited in agreement with ISO/IEC17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the 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 June 2018 (iis-protocol, version 3.5). 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

For the preparation of the sample for the regular analyzes in Hydraulic Oil (used) a batch of approximately 100 liters of Hydraulic Oil (used) was obtained from a third party. After homogenization 80 amber glass bottles of 1 L were filled and labelled #22211.
The homogeneity of the subsamples was checked by determination of Density at 15 °C in accordance with ISO12185 and by determination of Kinematic Viscosity at 40 °C in accordance with ASTM D445 on 8 stratified randomly selected subsamples.

	Density at 15 °C in kg/L	Kinematic Viscosity at 40 °C in mm^2/s
sample #22211-1	0.87251	41.75
sample #22211-2	0.87252	41.73
sample #22211-3	0.87252	41.74
sample #22211-4	0.87252	41.71
sample #22211-5	0.87252	41.73
sample #22211-6	0.87252	41.73
sample #22211-7	0.87252	41.72
sample #22211-8	0.87252	41.76

Table 1: homogeneity test results of subsamples #22211

From the above test results the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibility of the reference methods in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Density at 15 °C in kg/L	Kinematic Viscosity at 40 °C in mm^2/s
r (observed)	0.00001	0.04
reference method	ISO12185:96	iis memo 1401
0.3 x R (reference method)	0.00015	0.23

Table 2: evaluation of the repeatabilities of subsamples #22211

The calculated repeatabilities are in agreement with 0.3 times the corresponding reproducibility of the reference methods. Therefore, homogeneity of the subsamples was assumed.

For the preparation of the sample for the Metals determination in Hydraulic Oil (used) a batch of approximately 6 liters of Hydraulic Oil (used) with different elements added was obtained from a third party. After homogenization 70 PE bottles of 50 mL were filled and labelled #22212.
The homogeneity of the subsamples was checked by the determination of Phosphorus in accordance with ASTM D5185 on 8 stratified randomly selected subsamples.

	Phosphorus as P in mg/kg
sample #22212-1	1030
sample #22212-2	1030
sample #22212-3	1160 D(0.01)
sample #22212-4	1050
sample #22212-5	1010
sample #22212-6	1030
sample #22212-7	1010
sample #22212-8	1010

Table 3: homogeneity test results of subsamples #22212

Subsample 3 is a Dixon outlier and therefore excluded from statistical evaluation of the homogeneity.

From the above test results the repeatability was calculated and compared with 0.3 times the reproducibility of the reference test method in agreement with the procedure of ISO13528, Annex B2 in the next table.

	Phosphorus as P in mg/kg
r (observed)	42
reference test method	D5185:18
0.3 x R (reference test method)	41

Table 4: evaluation of the repeatability of subsamples #22212

The calculated repeatability is in agreement with 0.3 times the reproducibility of the reference test method. Therefore, homogeneity of the subsamples was assumed.

Depending on the registration of the participant the appropriate set of PT samples was sent on October 12, 2022. An SDS was added to the sample package.

2.5 STABILITY OF THE SAMPLES

The stability of Hydraulic Oil (used) packed in amber glass and PE bottles was checked. The material was found sufficiently stable for the period of the proficiency test.

2.6 ANALYZES

The participants were requested to determine on sample #22211: Total Acid Number, Density at 15 °C, Flash Point PMcc, Kinematic Viscosity at 40 °C and 100 °C, Kinematic Viscosity Stabinger at 40 °C and 100 °C, Sulfur, Water and Level of Contamination (counts/mL and scale number). Also, some additional details were asked about the determination of Total Acid Number (ASTM D664).
On sample #22212 it was requested to determine 23 elements: Al, Ba, B, Cd, Cr, Cu, Fe, Pb, Li, Mg, Mn, Mo, Ni, K, Si, Ag, Na, Sn, Ti, V, Ca, P and Zn.

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, 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 evaluations.

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

3 RESULTS

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

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyzes). Additional or corrected test results are used for data analysis and the original test results are placed under 'Remarks' in the 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 June 2018 (iis-protocol, version 3.5).

For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

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

The assigned value is determined by consensus based on the test results of the group of participants after rejection of the statistical outliers and/or suspect data.

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. 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. In this PT, the criterion of ISO13528, paragraph 9.2.1. was met for all evaluated tests, therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

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

3.2 GRAPHICS

In order to visualize the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported 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 (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

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 (derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation in this interlaboratory study.

The target standard deviation was calculated from the literature reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used, like Horwitz or an estimated reproducibility based on former iis proficiency tests.

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. Therefore, 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 with the dispatch of the samples.
For the sample for the regular analyzes two participants reported the test results after the final reporting date and seven other participants did not report any test results.
For the sample for the Metals determination four participants reported the test result after the final reporting date and eight other participants did not report any test results.
Not all participants were able to report all tests requested.

In total 62 participants reported 1273 numerical test results. Observed were 53 outlying test results, which is 4.2%. In proficiency tests outlier percentages of 3% - 7.5% are quite normal. Not all data sets proved to have a normal Gaussian distribution. These are referred to as “not OK” or “suspect”. The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1 EVALUATION PER SAMPLE AND PER TEST

In this section the reported test results are discussed per sample and per test. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are explained in appendix 3.

Unfortunately, a suitable reference test method, providing the precision data, is not available for all determinations. For these tests the calculated reproducibility was compared against the estimated reproducibility calculated with the Horwitz equation.

In the iis PT reports ASTM test methods are referred to with a number (e.g. D7647) and an added designation for the year that the test method was adopted or revised (e.g. D7647:10). When a method has been reapproved an “R” will be added and the year of approval (e.g. D7647:10R18).

sample #22211

Total Acid Number: This determination may be problematic depending on the end point and volume used. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D664-A:18e2 Inflection Point 60 mL and Buffer End Point 60 mL but not with the requirements for Inflection Point 125 mL and Buffer End Point 125 mL.
It is observed that three participants reported to have used BEP at pH 11 as determination end point. In method ASTM D664-A version 2018e2 the Buffer End Point at pH 10 is mentioned.

Density at 15 °C: This determination may be problematic for a number of participants. Six statistical outliers were observed. 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 depending on the procedure used. No statistical outliers were observed. The calculated reproducibility is in full agreement with the requirements of ASTM D93:20 procedure A but not with the requirements of procedure B.

Kinematic Viscosity at 40 °C: The precision statement given in ASTM D445 for used (in-service) formulated oils appears to be strict. Therefore, it is decided to use the reproducibilities found in previous iis PTs on used oils as mentioned in iis memo 1401.
This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility from iis memo 1401 but not with the requirements of ASTM D445:21e1.

Kinematic Viscosity at 100 °C: The precision statement given in ASTM D445 for used (in-service) formulated oils appears to be strict. Therefore, it is decided to use the reproducibilities found in previous iis PTs on used oils as mentioned in iis memo 1401.
This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the estimated reproducibility from iis memo 1401 but not with the requirements of ASTM D445:21e1.

Viscosity Stabinger at 40 °C: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the requirements of ASTM D7042:21a.

Viscosity Stabinger at 100 °C: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D7042:21a.

Sulfur: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the requirements of ASTM D4294:21.

Water: This determination may be problematic depending on the test method used. No statistical outliers were observed but one test result was excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the requirements of ASTM D6304-A:20 nor with procedure C but it is in agreement with the requirements of procedure B.
When the test results from ASTM D6304:20 were evaluated separately for the procedures A, B and C the calculated reproducibilities of procedure A and C are not in agreement with the respective requirements but the calculated reproducibility of procedure B is in agreement with the requirements.
A new version of ASTM D6304 was published in 2020 with major changes. In the 2016 version one precision statement was mentioned for test results

based on mass with a broad application range and one based on volume. In the 2020 version all precision statements are based on mass with three different procedures (A - direct injection, B - oven accessory and C - evaporation accessory) each with a different application range. In ASTM D6304:20 the reproducibility for all three procedures A, B and C is much stricter compared to ASTM D6304:16e1. Although there is a new version of ASTM D6304 published in 2020 eight participants mentioned to have used the A, B or C of the 2016 version still.

Level of Contamination: This determination was problematic. In total over six parameters nine statistical outliers were observed and twenty two other test results were excluded. Only the calculated reproducibility of particle size ≥ 14 µm (counts/mL) is after rejection of the suspect data in agreement with the requirements of ASTM D7647:10R18.
It was decided not to calculate z-scores for particle size ≥ 4 µm (counts/ml and scale number) due to the large difference between the calculated and reference reproducibility.

sample #22212

Aluminum: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D5185:18.

Barium: 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 D5185:18.

Boron: This determination was not problematic. One statistical outlier was observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D5185:18.

Cadmium: This determination was problematic. No statistical outliers were observed. The calculated reproducibility is not in agreement with the estimated reproducibility calculated with the Horwitz equation.

Chromium: This determination was not problematic. One statistical outlier was observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D5185:18.

Copper: This determination was not problematic. Three statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D5185:18.

Iron: This determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D5185:18.

Lead: This determination was not problematic. Four statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in agreement with the requirements of ASTM D5185:18.

Lithium: This determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in agreement with the estimated reproducibility calculated with the Horwitz equation.

Magnesium: This determination was not problematic. One statistical outlier was observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D5185:18.

Manganese: 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 D5185:18.

Molybdenum: 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 D5185:18.

Nickel: 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 D5185:18.

Potassium: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D5185:18.

Silicon: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D5185:18.

Silver: 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 D5185:18.

Sodium: This determination was not problematic. No statistical outliers were observed but one test result was excluded. The calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of ASTM D5185:18.

Tin: This determination was not problematic. No statistical outliers were observed. The calculated reproducibility is in agreement with the requirements of ASTM D5185:18.

Titanium: 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 D5185:18.

Vanadium: 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 D5185:18.

Calcium: This determination was not problematic. Four statistical outliers were observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the estimated reproducibility calculated with the Horwitz equation but not with the requirements of ASTM D5185:18.

Phosphorus: This determination was not problematic. Two statistical outliers were observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in full agreement with the requirements of ASTM D5185:18.

Zinc: This determination was not problematic. Four statistical outliers were observed and one other test result was excluded. The calculated reproducibility after rejection of the suspect data is in agreement with the requirements of ASTM D5185:18.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the reference test method and the reproducibility as found for the group of participating laboratories. The number of significant test results, the average, the calculated reproducibility (2.8 * standard deviation) and the target reproducibility derived from reference methods are presented in the next tables.

Parameter	unit	n	average	2.8 * sd	R(lit)
Total Acid Number	mg KOH/g	46	0.52	0.22	0.23
Density at 15 °C	kg/L	38	0.8725	0.0003	0.0005
Flash Point PMcc	°C	41	199.8	14.3	14.2
Kinematic Viscosity at 40 °C	mm^2/s	41	41.873	0.574	0.754
Kinematic Viscosity at 100 °C	mm^2/s	36	7.186	0.088	0.158
Viscosity Stabinger at 40 °C	mm^2/s	23	41.909	0.272	0.571
Viscosity Stabinger at 100 °C	mm^2/s	22	7.187	0.059	0.095
Sulfur	mg/kg	24	4882	695	458
Water	mg/kg	46	88.9	101.7	55.4
L. of Contamination ≥ 4 µm (c)	counts/mL	19	8835	27538	(9983)
L. of Contamination ≥ 6 µm (c)	counts/mL	20	133	204	101
L. of Contamination ≥ 14 µm (c)	counts/mL	20	9.4	13.0	12.6

Parameter	unit	n	average	2.8 * sd	R(lit)
L. of Contamination ≥ 4 µm (c)	scale no.	21	19.0	7.1	(1.7)
L. of Contamination ≥ 6 µm (c)	scale no.	21	14.1	2.8	1.2
L. of Contamination ≥ 14 µm (c)	scale no.	20	10.2	2.5	2

Table 5: reproducibilities of tests on sample #22211

For results between brackets no z-scores are calculated.

Element	unit	n	average	2.8 * sd	R(lit)
Aluminum as Al	mg/kg	33	4.1	2.1	5.5
Barium as Ba	mg/kg	33	61.2	12.2	26.0
Boron as B	mg/kg	31	4.9	4.2	13.2
Cadmium as Cd	mg/kg	24	3.9	1.6	1.4
Chromium as Cr	mg/kg	38	3.9	1.2	1.9
Copper as Cu	mg/kg	38	20.8	3.3	5.0
Iron as Fe	mg/kg	39	10.5	2.3	3.4
Lead as Pb	mg/kg	34	6.2	1.5	5.8
Lithium as Li	mg/kg	14	23.0	3.8	6.4
Magnesium as Mg	mg/kg	35	7.2	2.2	3.3
Manganese as Mn	mg/kg	33	4.1	1.0	0.7
Molybdenum as Mo	mg/kg	33	3.8	1.3	1.7
Nickel as Ni	mg/kg	38	4.0	1.0	3.0
Potassium as K	mg/kg	22	2.1	2.2	8.2
Silicon as Si	mg/kg	35	6.5	3.7	6.0
Silver as Ag	mg/kg	30	4.0	1.6	1.4
Sodium as Na	mg/kg	35	7.6	5.1	4.6
Tin as Sn	mg/kg	34	3.7	3.0	4.7
Titanium as Ti	mg/kg	31	3.7	1.3	4.6
Vanadium as V	mg/kg	37	3.8	1.5	1.2
Calcium as Ca	mg/kg	35	409	56	74
Phosphorus as P	mg/kg	35	1143	148	145
Zinc as Zn	mg/kg	34	1144	168	192

Table 6: reproducibilities of tests on sample #22212

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

4.3 COMPARISON OF THE PROFICIENCY TEST OF NOVEMBER 2022 WITH PREVIOUS PTS

	November 2022	November 2021	November 2020	November 2019	November 2018
Number of reporting laboratories	62	62	57	63	52
Number of test results	1273	1320	1313	1402	1053
Number of statistical outliers	53	48	57	87	49
Percentage of statistical outliers	4.2%	3.6%	4.3%	6.2%	4.7%

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 to the requirements of the reference test methods. The conclusions are given in the following table.

Determination	November 2022	November 2021	November 2020	November 2019	November 2018
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	++	++	+	+	+/-
Viscosity Stabinger at 100 °C	+	+	+	+	-
Sulfur	-	-	-	-	--
Water	-	-	++	++	++
L. of Contamination – counts/mL	--	-	+/-	-	-
L. of Contamination – scale no.	--	--	-	-	-
Aluminum as Al	++	++	++	+	+
Barium as Ba	++	++	+	++	++
Boron as B	++	+	++	++	++
Cadmium as Cd	-	++	++	-	n.e.
Chromium as Cr	+	+	+	+/-	n.e.
Copper as Cu	+	+	+	+	+
Iron as Fe	+	+	+/-	+	+/-
Lead as Pb	++	++	++	++	++
Lithium as Li	+	++	-	++	n.e.
Magnesium as Mg	+	+	+	+	+
Manganese as Mn	-	+	+/-	+/-	+/-
Molybdenum as Mo	+	+	+	+	++
Nickel as Ni	++	++	++	+	+/-
Potassium as K	++	n.e.	n.e.	(+)	++
Silicon as Si	+	++	+	++	+

Determination	November 2022	November 2021	November 2020	November 2019	November 2018
Silver as Ag	-	+	+	+	n.e.
Sodium as Na	+/-	+/-	+	+/-	+/-
Tin as Sn	+	++	++	++	+
Titanium as Ti	++	++	++	++	n.e.
Vanadium as V	-	++	+	+	n.e.
Calcium as Ca	+	+	+	+	--
Phosphorus as P	+/-	+/-	-	+	-
Zinc as Zn	+	-	-	+/-	-

Table 8: comparison determinations to the reference test methods

The following performance categories were used:

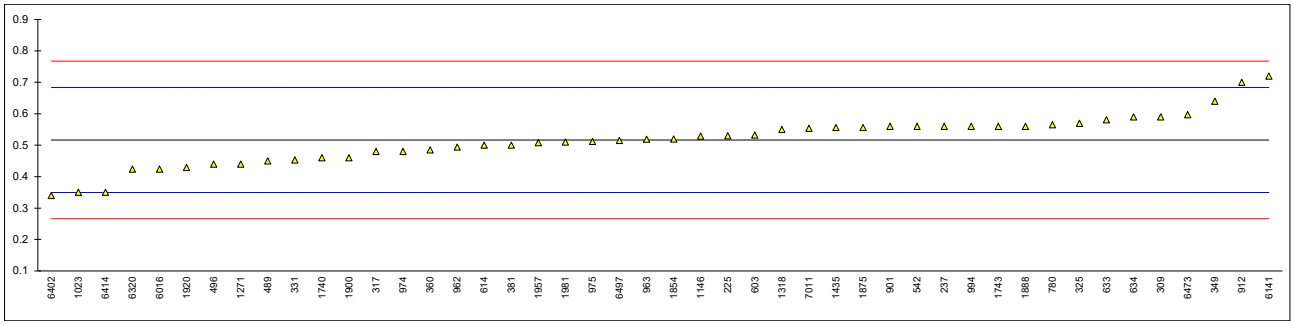
- ++ : group performed much better than the reference test method
- + : group performed better than the reference test method
- +/- : group performance equals the reference test method
- - : group performed worse than the reference test method
- -- : group performed much worse than the reference test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

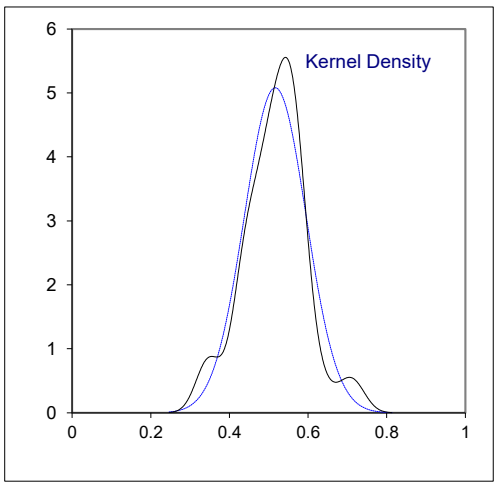
APPENDIX 1

Determination of Total Acid Number on sample #22211; results in mg KOH/g

lab	method	value	mark	z(targ)	remarks	End Point	Volume
178		-----		-----		---	---
179		-----		-----		---	---
225	D974	0.53		0.16		---	---
237	D664-B	0.56		0.52		Inflection Point	125 mL
256		-----		-----		---	---
257		-----		-----		---	---
309	D664-A	0.59		0.88		Buffer End Point pH 10	125 mL
317	D974	0.48		-0.44		---	---
325	D664-A	0.57		0.64		Buffer End Point pH 10	125 mL
331	D664-A	0.453		-0.76		Inflection Point	60 mL
335		-----		-----		---	---
339		-----		-----		---	---
349	D664-A	0.64		1.48		Buffer End Point pH 10	125 mL
360	D664-A	0.485		-0.38		Inflection Point	60 mL
381	D664-A	0.50		-0.20		---	---
432		-----		-----		---	---
442		-----		-----		---	---
451		-----		-----		---	---
489	EN12634	0.45		-0.80		Inflection Point	85 mL
496	D664-A	0.44		-0.92		---	---
542	D974	0.56		0.52		---	100 mL
562		-----		-----		---	---
603	D664-A	0.5325		0.19		Inflection Point	125 mL
614	D664-A	0.50		-0.20		---	60 mL
633	D664-A	0.58109		0.77		Buffer End Point pH 11	125 mL
634	D664-A	0.59		0.88		---	---
780	D664-A	0.565		0.58		Buffer End Point pH 10	60 mL
862		-----		-----		---	---
863		-----		-----		---	---
901	D664-A	0.56		0.52		Inflection Point	60 mL
912	D664-A	0.70		2.19		---	---
962	D664-A	0.494		-0.27		---	---
963	D664-B	0.519		0.03		Inflection Point	60 mL
974	D664-A	0.48		-0.44		Inflection Point	125 mL
975	D664-A	0.512		-0.06		---	60 mL
994	D664-A	0.56		0.52		Buffer End Point pH 10	125 mL
1023	D8045	0.35		-1.99		---	---
1146	D664-A	0.529		0.15		Buffer End Point pH 10	125 mL
1271	ISO6618	0.44		-0.92		---	---
1318	D664-A	0.550		0.40		Inflection Point	60 mL
1397		-----		-----		---	---
1414		-----		-----		---	---
1435	D664-A	0.556		0.47		Inflection Point	100 mL
1531		-----		-----		---	---
1740	D664-A	0.46		-0.68		Inflection Point	60 mL
1743	D664-A	0.56		0.52		Buffer End Point pH 11	60 mL
1788		-----		-----		---	---
1854	D664-A	0.52		0.04		Inflection Point	125 mL
1875	ISO6618	0.5561		0.47		---	---
1888	D664-A	0.560		0.52		Buffer End Point pH 11	60 mL
1900	D664-A	0.460		-0.68		Inflection Point	60 mL
1920	D664-AMod.	0.429		-1.05		Inflection Point	100 mL
1957	D664-A	0.508		-0.10		Buffer End Point pH 10	125 mL
1981	D664-A	0.51		-0.08		Inflection Point	60 mL
6016	D664-A	0.424		-1.11		Inflection Point	60 mL
6141	D664-A	0.72		2.43		Buffer End Point pH 10	80 mL
6257		-----		-----		---	---
6273		-----		-----		---	---
6320	D664-A	0.4238		-1.11		Inflection Point	60 mL
6322		-----		-----		---	---
6402	D7889	0.34	C	-2.11	fr. 0.97	---	---
6413		-----		-----		---	---
6414	D664-A	0.35		-1.99		Inflection Point	50 mL
6473	D664-A	0.5971		0.96		Inflection Point	60 mL
6497	D664-A	0.515		-0.02		Buffer End Point pH 10	60 mL
7011	D974	0.554		0.45		---	---

normality	OK
n	46
outliers	0
mean (n)	0.5166
st.dev. (n)	0.07852
R(calc.)	0.2199
st.dev.(D664-A:18e2, IP 60mL)	0.08358
R(D664-A:18e2, IP 60mL)	0.2340
compare	
R(D664-A:18e2, BEP 60mL)	0.2909
R(D664-A:18e2, IP 125mL)	0.1099
R(D664-A:18e2, BEP 125mL)	0.1578

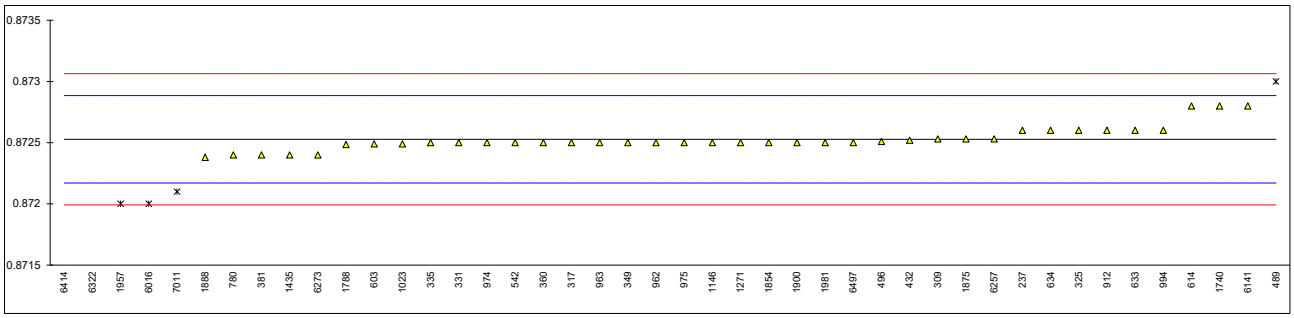


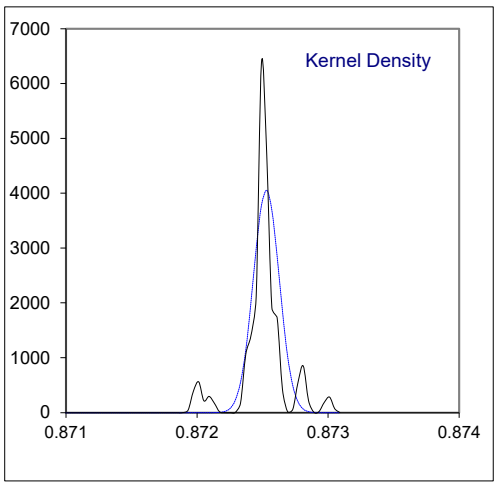


Determination of Density at 15 °C on sample #22211; results in kg/L

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
225		-----		-----	
237	D4052	0.8726	C	0.40	first reported 872.8 kg/m^3
256		-----		-----	
257		-----		-----	
309	D4052	0.87253		0.01	
317	D4052	0.8725		-0.16	
325	D4052	0.8726		0.40	
331	ISO12185	0.8725		-0.16	
335	ISO12185	0.8725		-0.16	
339		-----		-----	
349	D4052	0.8725		-0.16	
360	ISO12185	0.8725		-0.16	
381	D4052	0.8724		-0.72	
432	D4052	0.87252		-0.05	
442		-----		-----	
451		-----		-----	
489	DIN51757	0.87300	R(0.01)	2.64	
496	ISO12185	0.87251		-0.10	
542	D4052	0.8725		-0.16	
562		-----		-----	
603	D4052	0.87249		-0.21	
614	D4052	0.8728		1.52	
633	D4052	0.8726		0.40	
634	D4052	0.8726		0.40	
780	ISO12185	0.8724		-0.72	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912	D4052	0.8726		0.40	
962	D4052	0.8725		-0.16	
963	D4052	0.8725		-0.16	
974	D4052	0.8725		-0.16	
975	D4052	0.8725		-0.16	
994	ISO12185	0.8726		0.40	
1023	D4052	0.87249		-0.21	
1146	D4052	0.8725		-0.16	
1271	D4052	0.8725	C	-0.16	first reported 872.91 kg/m^3
1318		-----		-----	
1397		-----		-----	
1414		-----		-----	
1435	D4052	0.8724		-0.72	
1531		-----		-----	
1740	D4052	0.8728	C	1.52	first reported 0.8720
1743		-----		-----	
1788	D4052	0.872485		-0.24	
1854	D4052	0.8725	C	-0.16	first reported 871.6 kg/m^3
1875	DIN51757	0.87253		0.01	
1888	ISO12185	0.87238	C	-0.83	first reported 0.875321
1900	D4052	0.8725		-0.16	
1920		-----		-----	
1957	D4052	0.872	R(0.01)	-2.96	
1981	D4052	0.8725		-0.16	
6016	D7042	0.8720	R(0.01)	-2.96	
6141	D4052	0.8728		1.52	
6257	ISO12185	0.87253		0.01	
6273	D4052	0.8724		-0.72	
6320		-----		-----	
6322	ISO12185	0.8696	C,R(0.01)	-16.40	first reported 0.8544
6402		-----		-----	
6413		-----		-----	
6414	ISO12185	0.863	R(0.01)	-53.36	
6473		-----		-----	
6497	D4052	0.8725		-0.16	
7011	D7042	0.8721	R(0.01)	-2.40	

normality	not OK
n	38
outliers	6
mean (n)	0.87253
st.dev. (n)	0.000098
R(calc.)	0.00028
st.dev.(ISO12185:96)	0.000179
R(ISO12185:96)	0.0005

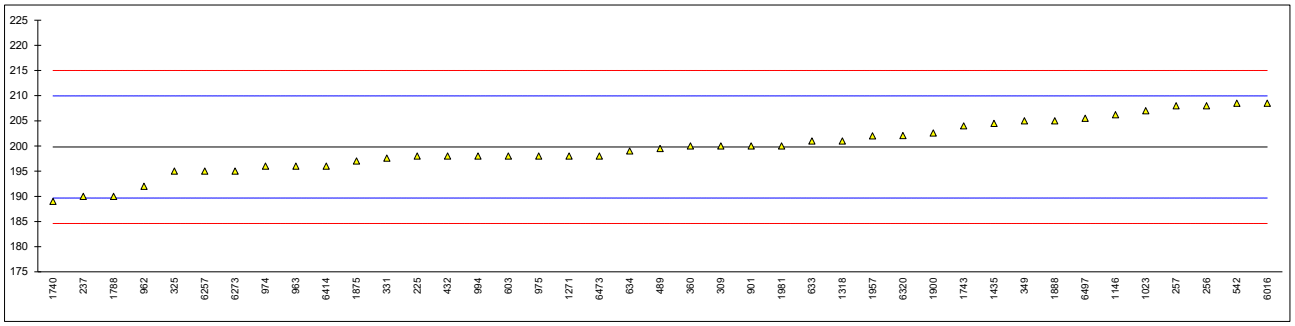


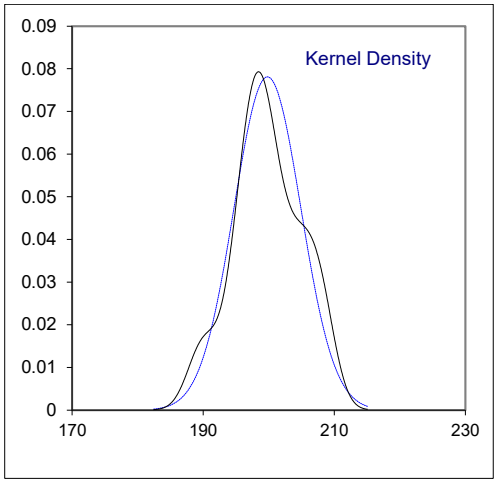


Determination of Flash Point PMcc on sample #22211; results in °C

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
225	D93-B	198.0		-0.36	
237	D93-B	190.0	C	-1.94	first reported 186.0
256	D3828	208	C	1.62	first reported 214
257	D3828	208	C	1.62	first reported 215
309	D93-A	200.0		0.04	
317		-----		-----	
325	D93-A	195		-0.95	
331	D93-A	197.6		-0.44	
335		-----		-----	
339		-----		-----	
349	D93-A	205		1.03	
360	ISO2719-A	200.0		0.04	
381		-----		-----	
432	D93-A	198.0		-0.36	
442		-----		-----	
451		-----		-----	
489	ISO2719-A	199.5		-0.06	
496		-----		-----	
542		208.5		1.72	
562		-----		-----	
603	D93-A	198		-0.36	
614		-----		-----	
633	D93-A	201		0.24	
634	D93-B	199		-0.16	
780		-----		-----	
862		-----		-----	
863		-----		-----	
901	D6450	200.0		0.04	
912		-----		-----	
962	D93-A	192		-1.54	
963	D93-A	196.0		-0.75	
974	D93-A	196.0		-0.75	
975	D93-A	198		-0.36	
994	D93-B	198.0		-0.36	
1023	D93-A	207		1.42	
1146	D93-B	206.2		1.26	
1271	ISO2719-A	198		-0.36	
1318	D93-A	201.0		0.24	
1397		-----		-----	
1414		-----		-----	
1435	D93-A	204.5		0.93	
1531		-----		-----	
1740	D93-A	189		-2.13	
1743	ISO2719-A	204.0		0.83	
1788	D93-B	190.0		-1.94	
1854		-----		-----	
1875	ISO2719-B	197		-0.55	
1888	ISO2719-A	205		1.03	
1900	D7094	202.6		0.55	
1920		-----		-----	
1957	D93-A	202		0.43	
1981	D93-A	200		0.04	
6016	D93-A	208.5		1.72	
6141		-----		-----	
6257	ISO2719-B	195.0		-0.95	
6273	D93-A	195		-0.95	
6320	ISO2719-A	202.07		0.45	
6322		-----		-----	
6402		-----		-----	
6413		-----		-----	
6414	D93-A	196		-0.75	
6473	D93-A	198.0		-0.36	
6497	D93-A	205.5		1.12	
7011		-----		-----	

normality	OK
n	41
outliers	0
mean (n)	199.80
st.dev. (n)	5.109
R(calc.)	14.30
st.dev.(D93-A:20)	5.066
R(D93-A:20)	14.19
compare	
R(D93-B:20)	10

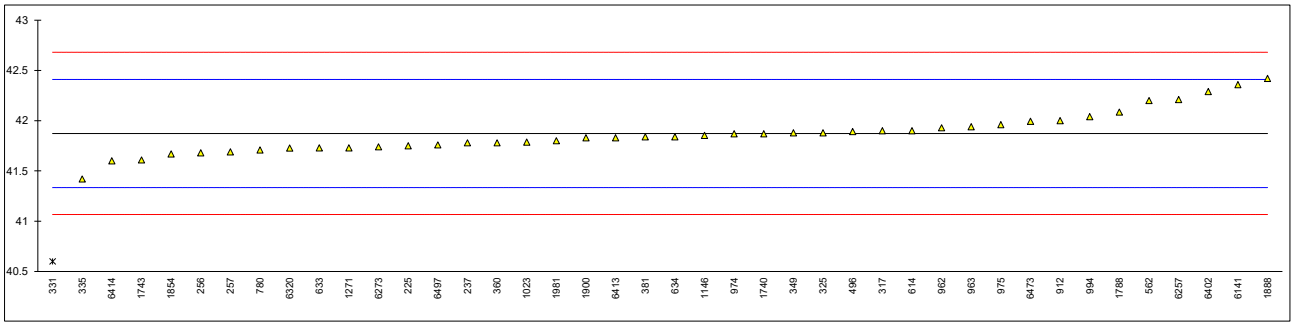


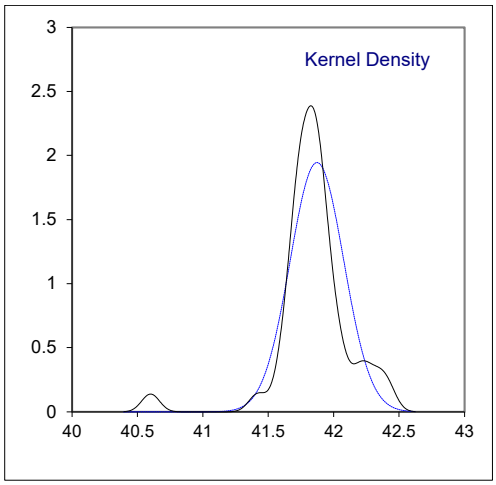


Determination of Kinematic Viscosity at 40 °C on sample #22211; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
225	D445	41.75		-0.46	
237	D445	41.78		-0.34	
256	D7279 corrected to D445	41.68	C	-0.72	first reported 42.95
257	D7279 corrected to D445	41.69		-0.68	
309		-----		-----	
317	D445	41.90		0.10	
325	D445	41.88		0.03	
331	D7279 corrected to D445	40.60	C,R(0.01)	-4.73	first reported 40.29
335	D445	41.42		-1.68	
339		-----		-----	
349	D445	41.88		0.03	
360	ISO3104	41.780		-0.34	
381	D445	41.84		-0.12	
432		-----		-----	
442		-----		-----	
451		-----		-----	
489		-----		-----	
496	D445	41.891		0.07	
542		-----		-----	
562	D7279 corrected to D445	42.20		1.22	
603		-----		-----	
614	D445	41.90		0.10	
633	D445	41.73		-0.53	
634	D7279 corrected to D445	41.84		-0.12	
780	D445	41.71		-0.60	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912	D445	42		0.47	
962	D445	41.93		0.21	
963	D445	41.94		0.25	
974	D445	41.87		-0.01	
975	D445	41.96		0.32	
994	D445	42.04		0.62	
1023	D445	41.787		-0.32	
1146	D445	41.854		-0.07	
1271	ISO3104	41.73		-0.53	
1318		-----		-----	
1397		-----		-----	
1414		-----		-----	
1435		-----		-----	
1531		-----		-----	
1740	D445	41.87		-0.01	
1743	D7279 corrected to D445	41.61	C	-0.98	first reported 41.21
1788	D445	42.0855		0.79	
1854	ISO3104	41.67		-0.75	
1875		-----		-----	
1888	D445	42.42	C	2.03	first reported 42.778
1900	D7279	41.83		-0.16	
1920		-----		-----	
1957		-----		-----	
1981	D445	41.8		-0.27	
6016		-----		-----	
6141	D445	42.3596		1.81	
6257	ISO3104	42.21		1.25	
6273	D445	41.74	C	-0.49	first reported 42.87
6320	ISO3104	41.728		-0.54	
6322		-----		-----	
6402	D445	42.29		1.55	
6413	ISO3104	41.83		-0.16	
6414	D7279 corrected to D445	41.6		-1.01	
6473	D445	41.995		0.45	
6497	D445	41.76		-0.42	
7011		-----		-----	

normality	suspect
n	41
outliers	1
mean (n)	41.8727
st.dev. (n)	0.20511
R(calc.)	0.5743
st.dev.(iis memo 1401)	0.26918
R(iis memo 1401)	0.7537
compare	
R(D445:21e2)	0.3688

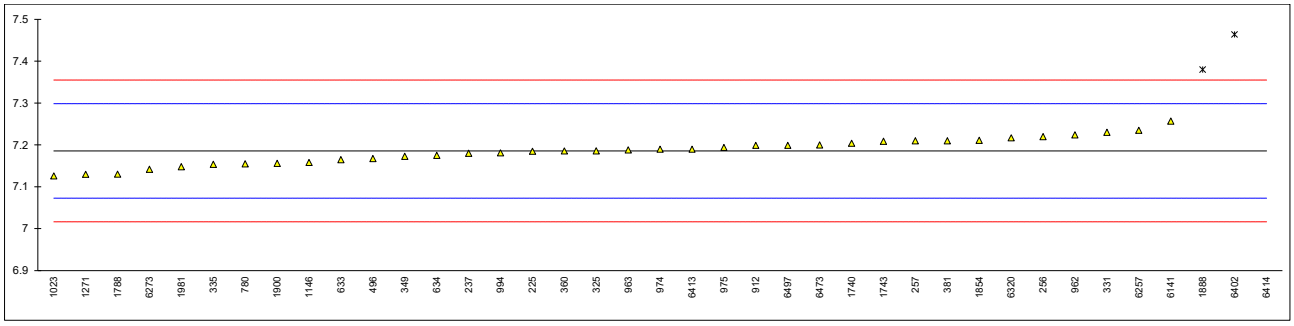


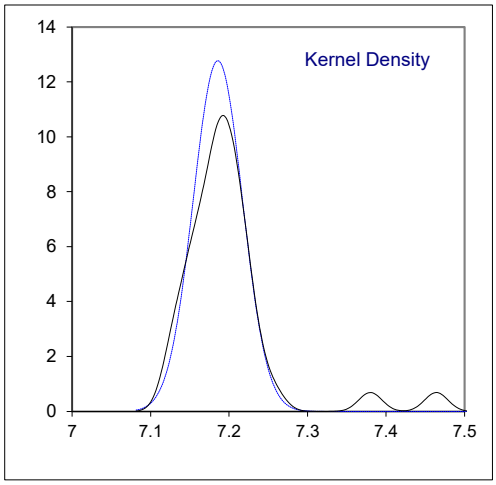


Determination of Kinematic Viscosity at 100 °C on sample #22211; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
225	D445	7.185		-0.01	
237	D445	7.180		-0.10	
256	D7279 corrected to D445	7.22		0.61	
257	D7279 corrected to D445	7.21		0.43	
309		-----		-----	
317		-----		-----	
325	D445	7.186		0.01	
331	D7279 corrected to D445	7.23	C	0.79	first reported 7.36
335	D445	7.154		-0.56	
339		-----		-----	
349	D445	7.173		-0.22	
360	ISO3104	7.1856		0.00	
381	D445	7.210		0.43	
432		-----		-----	
442		-----		-----	
451		-----		-----	
489		-----		-----	
496	D445	7.1676		-0.32	
542		-----		-----	
562		-----		-----	
603		-----		-----	
614		-----		-----	
633	D445	7.165		-0.37	
634	D7279 corrected to D445	7.175	C	-0.19	first reported 7.336
780	D445	7.155		-0.54	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912	D445	7.199		0.24	
962	D445	7.224		0.68	
963	D445	7.188		0.04	
974	D445	7.190		0.08	
975	D445	7.194		0.15	
994	D445	7.181		-0.08	
1023	D445	7.126		-1.06	
1146	D445	7.158		-0.49	
1271	ISO3104	7.13	C	-0.99	first reported 7.03
1318		-----		-----	
1397		-----		-----	
1414		-----		-----	
1435		-----		-----	
1531		-----		-----	
1740	D445	7.204		0.32	
1743	D7279 corrected to D445	7.209	C	0.41	first reported 6.917
1788	D445	7.1303		-0.98	
1854	ISO3104	7.211		0.45	
1875		-----		-----	
1888	D445	7.38	C,R(0.01)	3.44	first reported 7.507
1900	D7279	7.156		-0.53	
1920		-----		-----	
1957		-----		-----	
1981	D445	7.148		-0.67	
6016		-----		-----	
6141	D445	7.2568		1.26	
6257	ISO3104	7.235		0.87	
6273	D445	7.142	C	-0.77	first reported 7.386
6320	ISO3104	7.217		0.55	
6322		-----		-----	
6402	D445	7.464	C,R(0.01)	4.93	first reported 7.336
6413	ISO3104	7.19		0.08	
6414	D7279 corrected to D445	7.90	C,R(0.01)	12.65	first reported 7.9
6473	D445	7.2		0.25	
6497	D445	7.199		0.24	
7011		-----		-----	

normality	OK
n	36
outliers	3
mean (n)	7.1857
st.dev. (n)	0.03125
R(calc.)	0.0875
st.dev.(iis memo 1401)	0.05646
R(iis memo 1401)	0.1581
compare	
R(D445:21e2)	0.0602

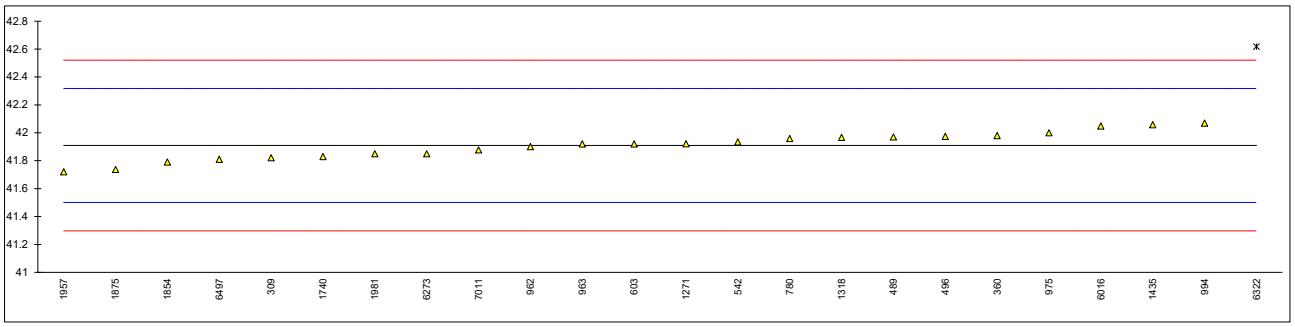


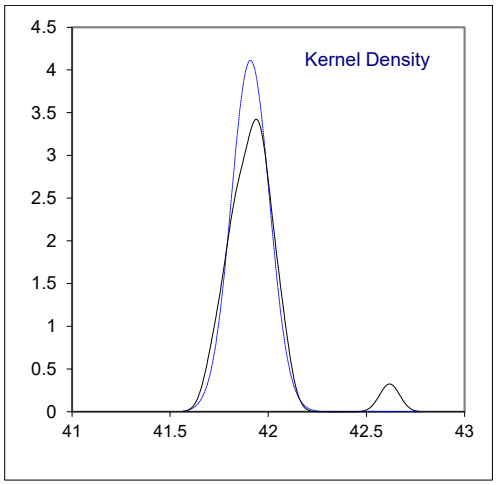


Determination of Kinematic Viscosity Stabinger at 40 °C on sample #22211; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
225		-----		-----	
237		-----		-----	
256		-----		-----	
257		-----		-----	
309	D7042	41.821		-0.43	
317		-----		-----	
325		-----		-----	
331		-----		-----	
335		-----		-----	
339		-----		-----	
349		-----		-----	
360	D7042	41.980		0.35	
381		-----		-----	
432		-----		-----	
442		-----		-----	
451		-----		-----	
489	DIN51659-2	41.97		0.30	
496	D7042	41.974		0.32	
542	D7042	41.935		0.13	
562		-----		-----	
603	D7042	41.92		0.05	
614		-----		-----	
633		-----		-----	
634		-----		-----	
780	D7042	41.96		0.25	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912		-----		-----	
962	D7042	41.90		-0.04	
963	D7042	41.92		0.05	
974		-----		-----	
975	D7042	42.00		0.45	
994	D7042	42.07		0.79	
1023		-----		-----	
1146		-----		-----	
1271	D7042	41.922	C	0.06	first reported 41.194
1318	D7042	41.9675	C	0.29	first reported as Kinematic Viscosity Stabinger at 100 °C
1397		-----		-----	
1414		-----		-----	
1435	D7042	42.058		0.73	
1531		-----		-----	
1740	D7042	41.83		-0.39	
1743		-----		-----	
1788		-----		-----	
1854		41.79		-0.58	
1875	D7042	41.737		-0.84	
1888		-----		-----	
1900		-----		-----	
1920		-----		-----	
1957	D7042	41.72		-0.93	
1981	D7042	41.85		-0.29	
6016	D7042	42.048		0.68	
6141		-----		-----	
6257		-----		-----	
6273	D7042	41.85		-0.29	
6320		-----		-----	
6322	D7042	42.618	C,R(0.01)	3.48	first reported 42.3
6402		-----		-----	
6413		-----		-----	
6414		-----		-----	
6473		-----		-----	
6497	D7042	41.81		-0.49	
7011	D7042	41.877	C	-0.16	reported as Kinematic Viscosity at 40 °C

normality	OK
n	23
outliers	1
mean (n)	41.9091
st.dev. (n)	0.09703
R(calc.)	0.2717
st.dev.(D7042:21a)	0.20385
R(D7042:21a)	0.5708

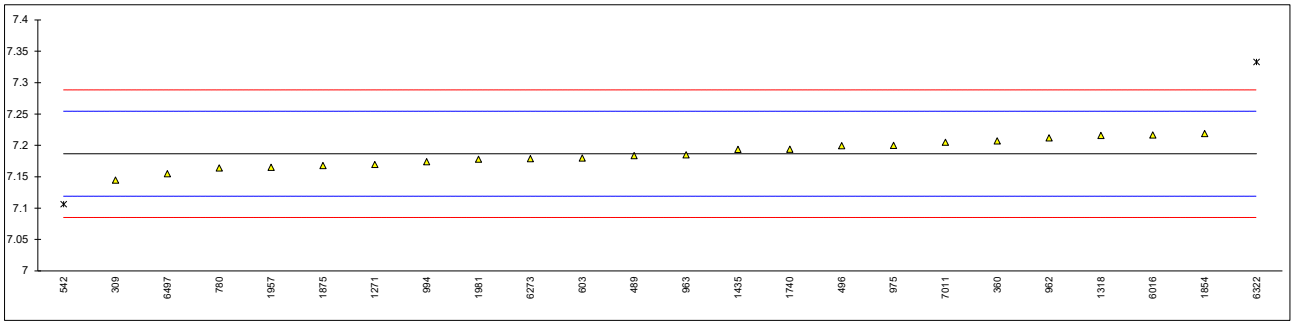


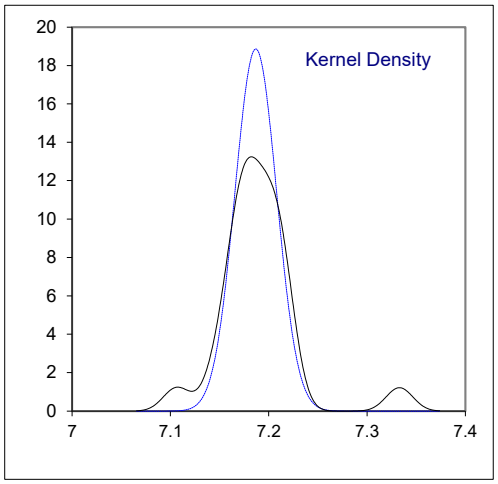


Determination of Kinematic Viscosity Stabinger at 100 °C on sample #22211; results in mm^2/s

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
225		-----		-----	
237		-----		-----	
256		-----		-----	
257		-----		-----	
309	D7042	7.1445		-1.25	
317		-----		-----	
325		-----		-----	
331		-----		-----	
335		-----		-----	
339		-----		-----	
349		-----		-----	
360	D7042	7.2072		0.60	
381		-----		-----	
432		-----		-----	
442		-----		-----	
451		-----		-----	
489	DIN51659-2	7.1836		-0.09	
496	D7042	7.1997		0.38	
542	D7042	7.1063	R(0.05)	-2.37	
562		-----		-----	
603	D7042	7.1799		-0.20	
614		-----		-----	
633		-----		-----	
634		-----		-----	
780	D7042	7.164		-0.67	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912		-----		-----	
962	D7042	7.212		0.75	
963	D7042	7.185		-0.05	
974		-----		-----	
975	D7042	7.200		0.39	
994	D7042	7.174		-0.38	
1023		-----		-----	
1146		-----		-----	
1271	D7042	7.1695	C	-0.51	first reported 7.0181
1318	D7042	7.2158	C	0.86	first reported as Kinematic Viscosity Stabinger at 40 °C
1397		-----		-----	
1414		-----		-----	
1435	D7042	7.1937		0.21	
1531		-----		-----	
1740	D7042	7.194		0.21	
1743		-----		-----	
1788		-----		-----	
1854		7.219		0.95	
1875	D7042	7.1679		-0.56	
1888		-----		-----	
1900		-----		-----	
1920		-----		-----	
1957	D7042	7.165		-0.64	
1981	D7042	7.178		-0.26	
6016	D7042	7.2166		0.88	
6141		-----		-----	
6257		-----		-----	
6273	D7042	7.179		-0.23	
6320		-----		-----	
6322	D7042	7.333	C,R(0.01)	4.31	first reported 7.275
6402		-----		-----	
6413		-----		-----	
6414		-----		-----	
6473		-----		-----	
6497	D7042	7.155		-0.94	
7011	D7042	7.205	C	0.54	reported as Kinematic Viscosity at 100 °C

normality	OK
n	22
outliers	2
mean (n)	7.1867
st.dev. (n)	0.02116
R(calc.)	0.0593
st.dev.(D7042:21a)	0.03390
R(D7042:21a)	0.0949

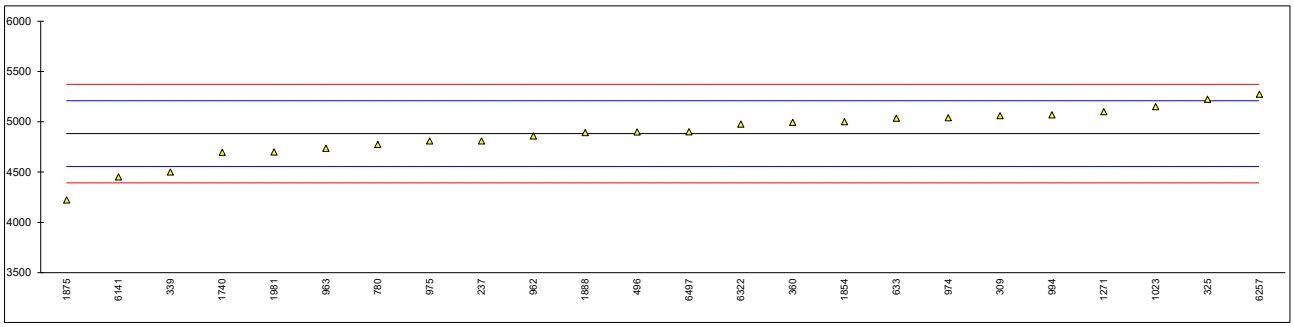


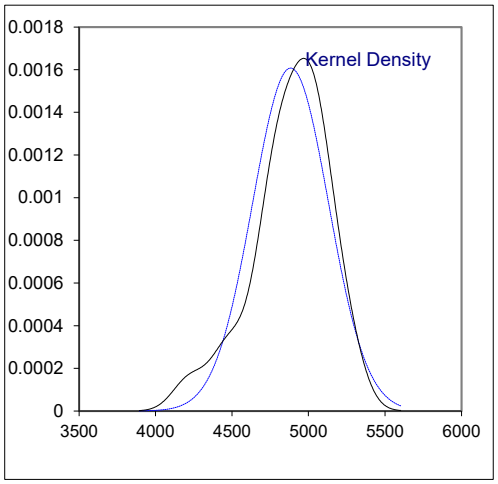


Determination of Sulfur on sample #22211; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
225		-----		-----	
237	D4294	4810		-0.44	
256		-----		-----	
257		-----		-----	
309	D4294	5060		1.09	
317		-----		-----	
325	D5185	5224		2.09	
331		-----		-----	
335		-----		-----	
339	INH-024	4500		-2.34	
349		-----		-----	
360	ISO8754	4994		0.68	
381		-----		-----	
432		-----		-----	
442		-----		-----	
451		-----		-----	
489		-----		-----	
496	D2622	4899.05		0.10	
542		-----		-----	
562		-----		-----	
603		-----		-----	
614		-----		-----	
633	D4294	5036		0.94	
634		-----		-----	
780	D4294	4775		-0.66	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912		-----		-----	
962	D4294	4860	C	-0.14	first reported 486
963	D4294	4737		-0.89	
974	D4294	5040		0.96	
975	D4294	4809		-0.45	
994	D4294	5070		1.15	
1023	D4294	5150	C	1.64	first reported 0.515
1146		-----		-----	
1271	ISO8754	5100	C	1.33	first reported 8100
1318		-----		-----	
1397		-----		-----	
1414		-----		-----	
1435		-----		-----	
1531		-----		-----	
1740	D4294	4697		-1.13	
1743		-----		-----	
1788		-----		-----	
1854	ISO8754	5000	C	0.72	first reported 500
1875	DIN51724-1	4223		-4.03	
1888	D5185	4892.4	C	0.06	first reported 10908.17
1900		-----		-----	
1920		-----		-----	
1957		-----		-----	
1981	D4294	4701	C	-1.11	first reported 0.4701
6016		-----		-----	
6141	D4294	4452		-2.63	
6257	ISO8754	5273.0		2.39	
6273		-----		-----	
6320		-----		-----	
6322	DIN51418	4977		0.58	
6402		-----		-----	
6413		-----		-----	
6414		-----		-----	
6473		-----		-----	
6497	D2622	4900		0.11	
7011		-----		-----	

normality	OK
n	24
outliers	0
mean (n)	4882.5
st.dev. (n)	248.18
R(calc.)	694.9
st.dev.(D4294:21)	163.47
R(D4294:21)	457.7

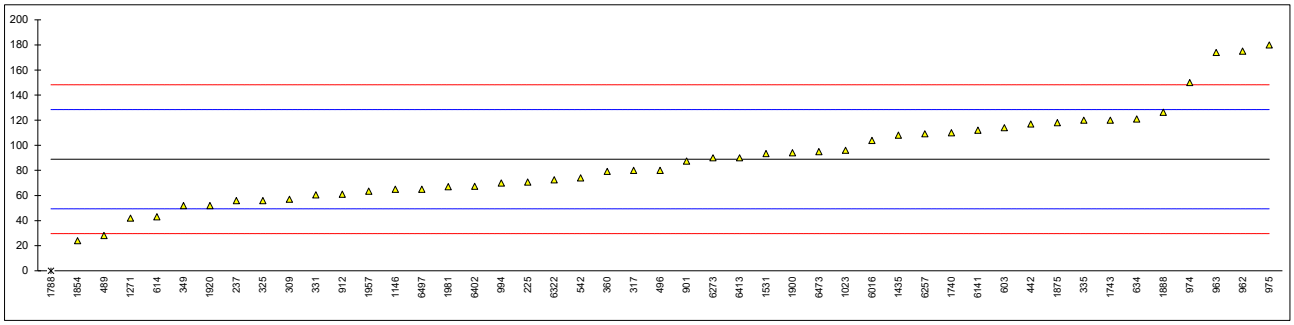


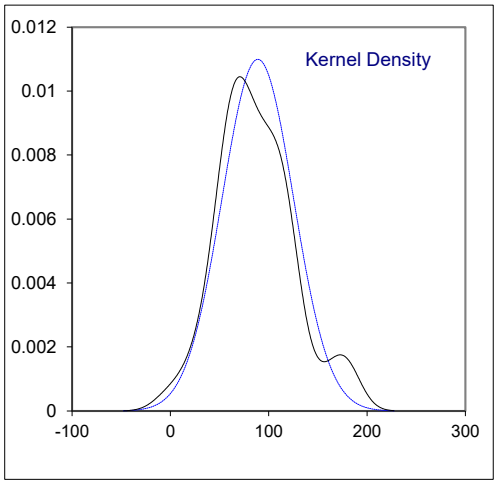


Determination of Water on sample #22211; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
225	D6304-A:20	70.82		-0.91	
237	D6304-C:16e1	56		-1.66	
256		-----		-----	
257		-----		-----	
309	D6304-C:20	57		-1.61	
317	D6304-A:20	80	C	-0.45	first reported 220
325	D6304-C:20	56		-1.66	
331	D6304	60.50		-1.44	
335	ISO12937	120		1.57	
339		-----		-----	
349	D6304-C:20	52		-1.87	
360	D6304-A:20	79.2		-0.49	
381		-----		-----	
432		-----		-----	
442	IP438	117		1.42	
451		-----		-----	
489	DIN51777	28.1		-3.07	
496	D6304-C:16e1	80		-0.45	
542	D6304-A:16e1	74		-0.75	
562		-----		-----	
603	D6304-B:20	114		1.27	
614	D6304-B:20	43		-2.32	
633		-----		-----	
634	D6304-A:20	121		1.62	
780	D6304-B:20	< 30		<-2.98	possibly a false negative test result
862		-----		-----	
863		-----		-----	
901	D6304-A:20	87.5		-0.07	
912	D6304-C:20	61		-1.41	
962	D6304-A:20	175		4.35	
963	D6304-A:20	174		4.30	
974	D6304-A:16e1	150		3.09	
975	D6304-A:16e1	180		4.60	
994	D6304-C:20	70		-0.96	
1023	D6304-A:20	96		0.36	
1146	D6304-B:20	65		-1.21	
1271	ISO12937	42		-2.37	
1318		-----		-----	
1397		-----		-----	
1414		-----		-----	
1435	D6304-A:20	108.2		0.97	
1531	D6304-A:16e1	93.4		0.23	
1740	D6304-B:20	110		1.07	
1743	ISO12937	120		1.57	
1788	D95	0.00	ex	-4.49	excluded as method ASTM D95 uses %V/V as reporting unit
1854	D6304-C:20	24		-3.28	
1875	ISO12937	118		1.47	
1888	EN60814	126.37		1.89	
1900	D6304-C:20	94		0.26	
1920	D6304-B:20	52		-1.87	
1957	D6304-A:16e1	63.5		-1.28	
1981	D6304-C:20	67		-1.11	
6016	D6304-A:16e1	103.9		0.76	
6141	D1533	112		1.17	
6257	ISO12937	109.26		1.03	
6273	D6304-A:20	90		0.05	
6320		-----		-----	
6322	EN60814	72.5		-0.83	
6402	D1533	67.3		-1.09	
6413	ISO12937	90		0.05	
6414		-----		-----	
6473	D6304-A:20	95		0.31	
6497	D6304-B:20	65		-1.21	
7011		-----		-----	

		D6304-A:20 only	D6304-B:20 only	D6304-C:20 only
normality	OK	suspect	OK	not OK
n	46	11	6	8
outliers	0 + 1ex	0	0	0
mean (n)	88.925	106.975	74.833	60.125
st.dev. (n)	36.3070	36.1324	29.9961	19.6064
R(calc.)	101.660	101.171	83.989	54.898
st.dev.(D6304-A:20)	19.7874	22.5429	----	----
R(D6304-A:20)	55.405	63.120	----	----
compare				
R(D6304-B:20)	146.668	----	136.644	----
R(D6304-C:20)	40.633	----	----	29.646



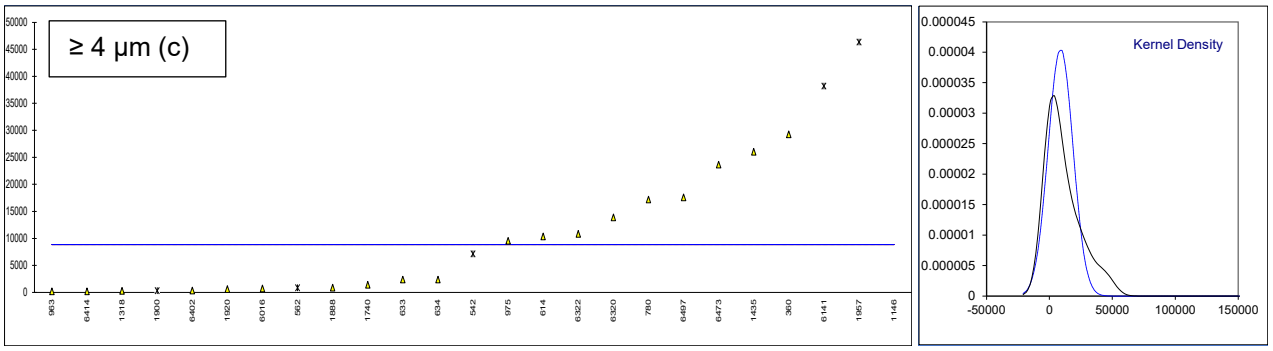


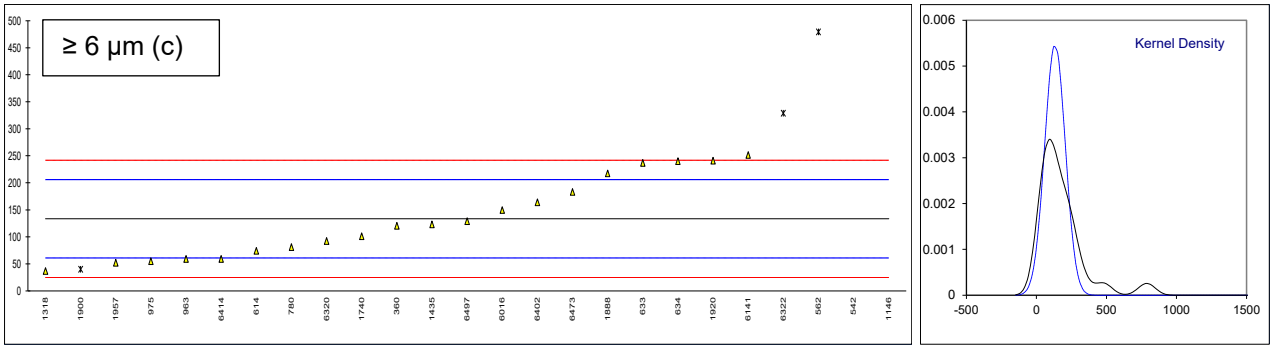
Determination of Level of Contamination on sample #22211; results in counts/mL

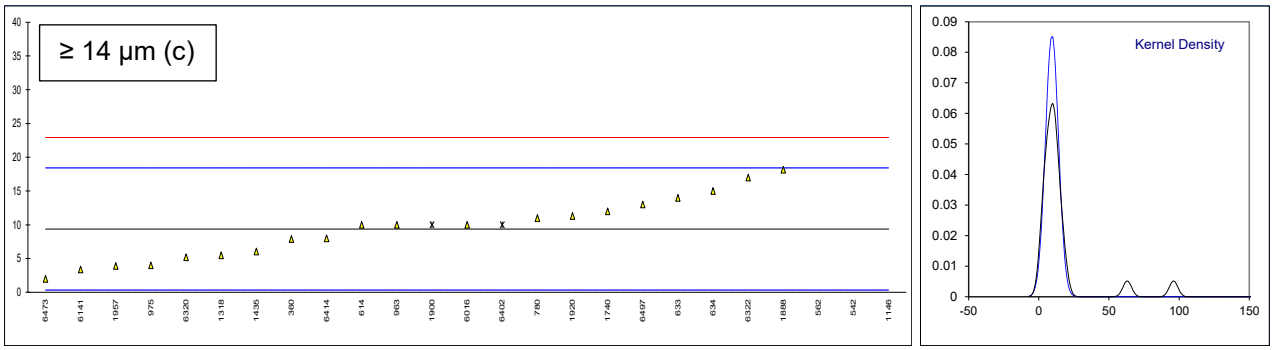
lab	method	≥ 4 µm (c)	mark	z(targ)	≥ 6 µm (c)	mark	z(targ)	≥ 14 µm (c)	mark	z(targ)
178		-----		-----	-----		-----	-----		-----
179		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
256		-----		-----	-----		-----	-----		-----
257		-----		-----	-----		-----	-----		-----
309		-----		-----	-----		-----	-----		-----
317		-----		-----	-----		-----	-----		-----
325		-----		-----	-----		-----	-----		-----
331		-----		-----	-----		-----	-----		-----
335		-----		-----	-----		-----	-----		-----
339		-----		-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
360	ISO4406	29265.0		-----	120.5		-0.35	7.9		-0.32
381		-----		-----	-----		-----	-----		-----
432		-----		-----	-----		-----	-----		-----
442		-----		-----	-----		-----	-----		-----
451		-----		-----	-----		-----	-----		-----
489		-----		-----	-----		-----	-----		-----
496		-----		-----	-----		-----	-----		-----
542	ISO11500	7140	ex	-----	788	R(0.01)	18.09	96	R(0.01)	19.18
562	D7596	856.5	ex	-----	479.4	R(0.01)	9.56	63	C,R(0.01)	11.88
603		-----		-----	-----		-----	-----		-----
614	D7647	10372		-----	74		-1.64	10		0.14
633	ISO11500	2375		-----	237		2.87	14		1.03
634	ISO11500	2388		-----	240		2.95	15		1.25
780	ISO11500	17186		-----	81		-1.45	11		0.36
862		-----		-----	-----		-----	-----		-----
863		-----		-----	-----		-----	-----		-----
901		-----		-----	-----		-----	-----		-----
912		-----		-----	-----		-----	-----		-----
962		-----		-----	-----		-----	-----		-----
963	ISO4407	197		-----	59		-2.05	10		0.14
974		-----		-----	-----		-----	-----		-----
975	ISO4407	9543		-----	55		-2.16	4		-1.19
994		-----		-----	-----		-----	-----		-----
1023		-----		-----	-----		-----	-----		-----
1146	AS4059D	748593	ex	-----	7347	ex	199.35	320	ex	68.79
1271		-----		-----	-----		-----	-----		-----
1318		301.47		-----	36.60		-2.67	5.47		-0.86
1397		-----		-----	-----		-----	-----		-----
1414		-----		-----	-----		-----	-----		-----
1435		26052.27		-----	123.2		-0.28	6.03		-0.74
1531		-----		-----	-----		-----	-----		-----
1740	D7647	1403		-----	101		-0.89	12		0.58
1743		-----		-----	-----		-----	-----		-----
1788		-----		-----	-----		-----	-----		-----
1854		-----		-----	-----		-----	-----		-----
1875		-----		-----	-----		-----	-----		-----
1888	ISO4407	882.33		-----	217.42		2.32	18.14		1.94
1900	ISO4407	320	ex	-----	40	ex	-2.58	10	ex	0.14
1920	D7596	599.1		-----	241.1		2.98	11.3		0.43
1957		46341.0	C,DG(0.05)	-----	52	C	-2.25	3.9	C	-1.21
1981		-----		-----	-----		-----	-----		-----
6016	D7596	732.5	C	-----	149.6	C	0.45	10.0	C	0.14
6141	ISO4406	38221.75	DG(0.05)	-----	251.6		3.27	3.38		-1.33
6257		-----		-----	-----		-----	-----		-----
6273		-----		-----	-----		-----	-----		-----
6320	ISO11500	13894.5		-----	92.3		-1.13	5.2		-0.92
6322		10838		-----	329	ex	5.41	17		1.69
6402	D7596	362		-----	164		0.85	10	ex	0.14
6413		-----		-----	-----		-----	-----		-----
6414	D7596	216		-----	59		-2.05	8		-0.30
6473		23647		-----	183		1.37	2		-1.63
6497	D7647	17607		-----	129		-0.12	13		0.80
7011		-----		-----	-----		-----	-----		-----

normality	OK	OK	OK
n	19	20	20
outliers	3 + 3ex	2 + 3ex	2 + 3ex
mean (n)	8834.799	133.316	9.366
st.dev. (n)	9835.1602	72.8739	4.6605
R(calc.)	27538.448	204.047	13.049
st.dev.(D7647:10R18)	(3565.4724)	36.1858	4.5158
R(D7647:10R18)	(9983.323)	101.320	12.644

Lab 542 test result excluded at ≥ 4 µm as corresponding test results in counts/mL are statistical outliers
Lab 562 first reported 116.7, test result excluded at ≥ 4 µm as corresponding test results in counts/mL are statistical outliers
Lab 1146 test result excluded at ≥ 4 µm, ≥ 6 µm and ≥ 14 µm as test result in counts/mL and ISO4406 scale number did not match
Lab 1900 test result excluded at ≥ 4 µm, ≥ 6 µm and ≥ 14 µm as test result in counts/mL and ISO4406 scale number did not match
Lab 1957 first reported ISO4406 scale number
Lab 6016 reported ISO4406 scale number
Lab 6322 test result excluded at ≥ 6 µm as test result in counts/mL and ISO4406 scale number did not match
Lab 6402 test result excluded at ≥ 14 µm as test result in counts/mL and ISO4406 scale number did not match





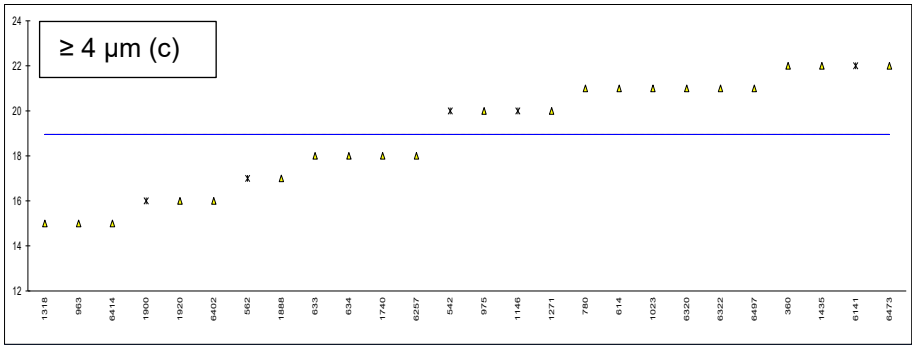


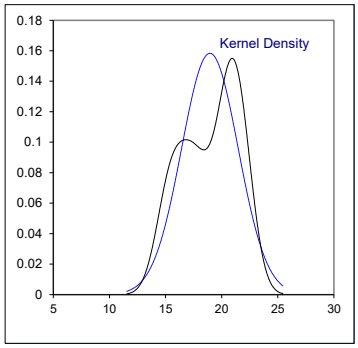
Determination of Level of Contamination acc. to ISO4406 scale on sample #22211; results in scale number

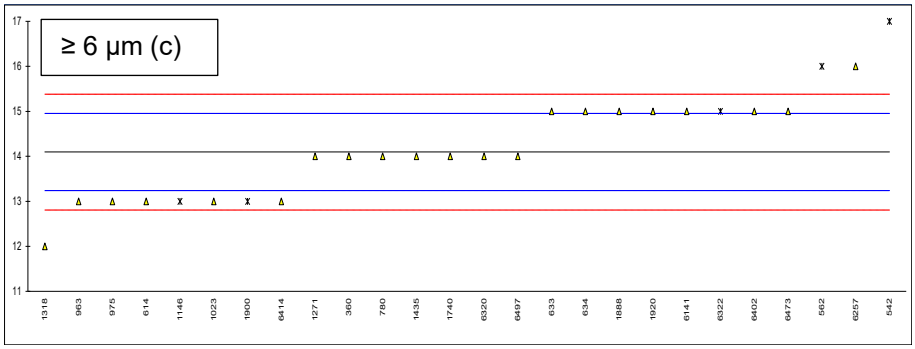
lab	method	≥ 4 µm (c)	mark	z(targ)	≥ 6 µm (c)	mark	z(targ)	≥ 14 µm (c)	mark	z(targ)
178		-----		-----	-----		-----	-----		-----
179		-----		-----	-----		-----	-----		-----
225		-----		-----	-----		-----	-----		-----
237		-----		-----	-----		-----	-----		-----
256		-----		-----	-----		-----	-----		-----
257		-----		-----	-----		-----	-----		-----
309		-----		-----	-----		-----	-----		-----
317		-----		-----	-----		-----	-----		-----
325		-----		-----	-----		-----	-----		-----
331		-----		-----	-----		-----	-----		-----
335		-----		-----	-----		-----	-----		-----
339		-----		-----	-----		-----	-----		-----
349		-----		-----	-----		-----	-----		-----
360	ISO4406	22		-----	14		-0.22	10		-0.28
381		-----		-----	-----		-----	-----		-----
432		-----		-----	-----		-----	-----		-----
442		-----		-----	-----		-----	-----		-----
451		-----		-----	-----		-----	-----		-----
489		-----		-----	-----		-----	-----		-----
496		-----		-----	-----		-----	-----		-----
542	ISO4406	20	ex	-----	17	ex	6.78	14	DG(0.05)	5.32
562	ISO4406	17	ex	-----	16	ex	4.44	13	C,DG(0.05)	3.92
603		-----		-----	-----		-----	-----		-----
614	ISO4406	21		-----	13		-2.56	10		-0.28
633	ISO4406	18		-----	15		2.11	11		1.12
634	ISO4406	18		-----	15		2.11	11		1.12
780	ISO4406	21		-----	14		-0.22	11		1.12
862		-----		-----	-----		-----	-----		-----
863		-----		-----	-----		-----	-----		-----
901		-----		-----	-----		-----	-----		-----
912		-----		-----	-----		-----	-----		-----
962		-----		-----	-----		-----	-----		-----
963	ISO4406	15		-----	13		-2.56	10		-0.28
974		-----		-----	-----		-----	-----		-----
975	ISO4406	20		-----	13		-2.56	9		-1.68
994		-----		-----	-----		-----	-----		-----
1023	ISO4406	21		-----	13		-2.56	<7	C, f-?	<-4.48
1146	AS4059D	20	ex	-----	13	ex	-2.56	>9	ex	-----
1271	ISO4406	20		-----	14		-0.22	11		1.12
1318	ISO4406	15		-----	12		-4.89	10		-0.28
1397		-----		-----	-----		-----	-----		-----
1414		-----		-----	-----		-----	-----		-----
1435	ISO4406	22		-----	14		-0.22	10		-0.28
1531		-----		-----	-----		-----	-----		-----
1740	D7647	18		-----	14		-0.22	11		1.12
1743		-----		-----	-----		-----	-----		-----
1788		-----		-----	-----		-----	-----		-----
1854		-----		-----	-----		-----	-----		-----
1875		-----		-----	-----		-----	-----		-----
1888	ISO4406	17		-----	15		2.11	11		1.12
1900	ISO4406	16	ex	-----	13	ex	-2.56	11	ex	1.12
1920	ISO4406	16		-----	15		2.11	11		1.12
1957		-----		-----	-----		-----	-----		-----
1981		-----		-----	-----		-----	-----		-----
6016		-----		-----	-----		-----	-----		-----
6141	ISO4406	22	ex	-----	15		2.11	9		-1.68
6257		18		-----	16		4.44	9		-1.68
6273		-----		-----	-----		-----	-----		-----
6320	ISO4406	21		-----	14		-0.22	10		-0.28
6322	ISO4406	21		-----	15	ex	2.11	11		1.12
6402	ISO4406	16		-----	15		2.11	11	ex	1.12
6413		-----		-----	-----		-----	-----		-----
6414	ISO4406	15		-----	13		-2.56	10		-0.28
6473	ISO4406	22		-----	15		2.11	8		-3.08
6497	ISO4406	21		-----	14		-0.22	11		1.12
7011		-----		-----	-----		-----	-----		-----

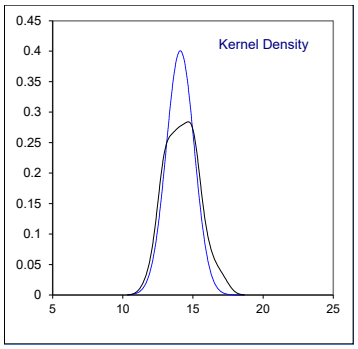
normality	OK	OK	OK
n	21	21	20
outliers	0 + 5ex	0 + 5ex	2 + 3ex
mean (n)	18.95	14.10	10.20
st.dev. (n)	2.519	0.995	0.894
R(calc.)	7.05	2.79	2.50
st.dev.(D7647:10R18)	(0.607)	0.429	0.714
R(D7647:10R18)	(1.7)	1.2	2

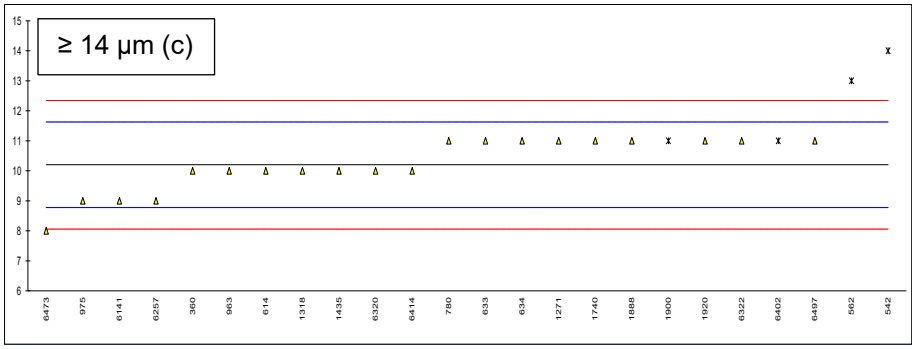
Lab 542 test result excluded at ≥ 4 µm and ≥ 6 µm as corresponding test results in counts/mL are statistical outliers or excluded
Lab 562 first reported 14, test result excuded. at ≥ 4 µm and ≥ 6 µm as corresponding test results in counts/mL are stat. outliers or excl.
Lab 1023 first reported 7
Lab 1146 test result excluded at ≥ 4 µm, ≥ 6 µm and ≥ 4 µm as test result in counts/mL and ISO4406 scale number did not match
Lab 1900 test result excluded at ≥ 4 µm, ≥ 6 µm and ≥ 4 µm as test result in counts/mL and ISO4406 scale number did not match
Lab 6322 test result excluded at ≥ 6 µm as test result in counts/mL and ISO4406 scale number did not match
Lab 6402 test result excluded at ≥ 14 µm as test result in counts/mL and ISO4406 scale number did not match

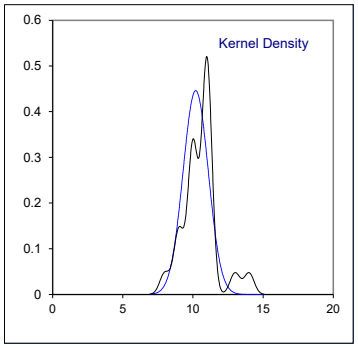








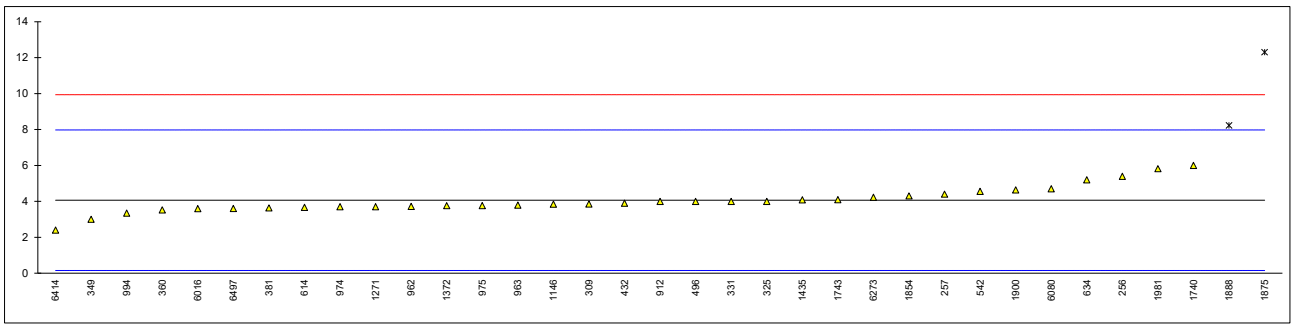


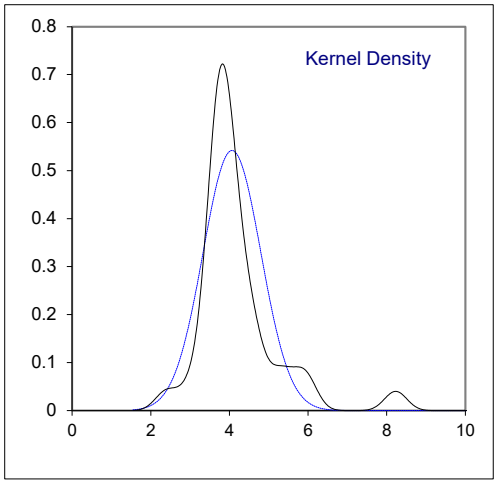


Determination of Aluminum as Al on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		5.4		0.68	
257	D6595	4.4		0.17	
309	D5185	3.847		-0.11	
325	D5185	4		-0.03	
331	D5185	4		-0.03	
339	INH-047	<5		-----	
349	D5185	3		-0.55	
360	D5185	3.52		-0.28	
381	D5185	3.64		-0.22	
432	D5185	3.9		-0.09	
451		-----		-----	
496	D5185	4.0		-0.03	
542	D6595	4.56		0.25	
562		-----		-----	
614	D5185	3.67		-0.20	
633		-----		-----	
634	D6595	5.2		0.58	
780	D5185	< 6.0		-----	
862		-----		-----	
863		-----		-----	
901	D5185	<6		-----	
912	D5185	4		-0.03	
962	D5185	3.72		-0.18	
963	D5185	3.79		-0.14	
974	D5185	3.7		-0.19	
975	D5185	3.77		-0.15	
994	D5185	3.35		-0.37	
1059	In house	<6		-----	
1146	D5185	3.84		-0.12	
1271		3.7		-0.19	
1372	D5185	3.76		-0.16	
1414		-----		-----	
1435	D5185	4.087		0.01	
1740	D5185	6		0.99	
1743	NF T60-106	4.1		0.02	
1854	D5185	4.3		0.12	
1875		12.3	R(0.01)	4.21	
1888	D5185	8.23	R(0.01)	2.13	
1900	D5185	4.64	C	0.29	first reported 0.305
1957	D5185	<1		-----	
1981	D5185	5.82		0.90	
6016	D5185	3.593		-0.24	
6080	D5185	4.7		0.32	
6273	D5185	4.23		0.08	
6322	DIN51418	<10		-----	
6402		-----		-----	
6414	D5185	2.4		-0.85	
6497	DIN51399-2Mod.	3.6		-0.24	

normality	suspect
n	33
outliers	2
mean (n)	4.068
st.dev. (n)	0.7362
R(calc.)	2.061
st.dev.(D5185:18)	1.9546
R(D5185:18)	5.473

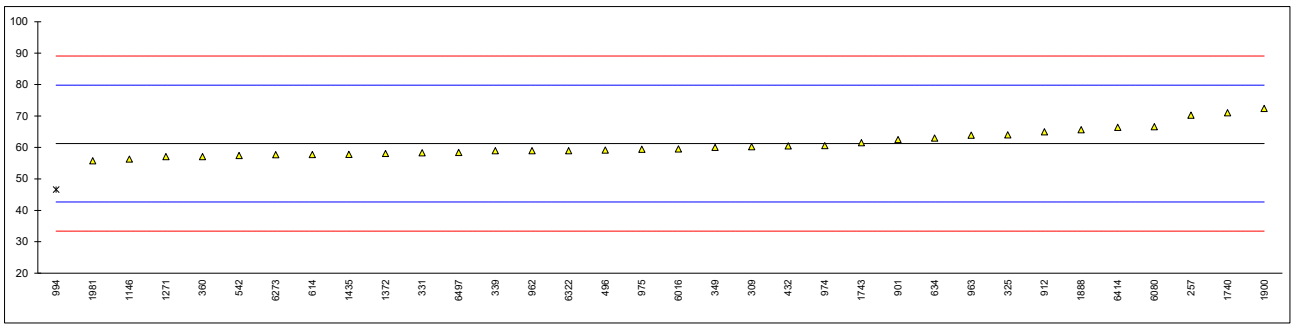

14
12
10
8
6
4
2
0
6414
349
994
360
6016
6497
381
614
974
1271
962
1372
975
963
1146
309
432
912
496
331
325
1435
1743
6273
1854
257
542
1900
6080
634
256
1981
1740
1888
1875

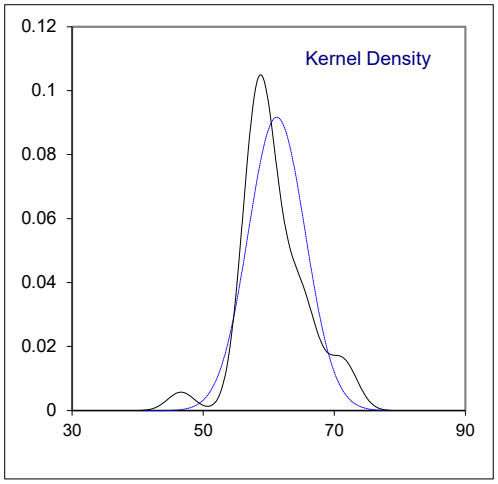

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
10

Determination of Barium as Ba on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	70.29		0.98	
309	D5185	60.244		-0.11	
325	D5185	64		0.30	
331	D5185	58.3		-0.32	
339	INH-047	59		-0.24	
349	D5185	60		-0.13	
360	D5185	57.12		-0.44	
381		-----		-----	
432	D5185	60.5		-0.08	
451		-----		-----	
496	D5185	59.16		-0.22	
542	D6595	57.44		-0.41	
562		-----		-----	
614	D5185	57.77		-0.37	
633		-----		-----	
634	D6595	63	C	0.19	first reported 82
780	D5185	> 4.00		-----	
862		-----		-----	
863		-----		-----	
901	D5185	62.5		0.14	
912	D5185	65		0.41	
962	D5185	59.0		-0.24	
963	D5185	63.91		0.29	
974	D5185	60.6		-0.07	
975	D5185	59.43		-0.19	
994	D5185	46.61	D(0.05)	-1.57	
1059		-----		-----	
1146	D5185	56.3		-0.53	
1271		57.1		-0.44	
1372	D5185	58.08		-0.34	
1414		-----		-----	
1435	D5185	57.79		-0.37	
1740	D5185	71		1.05	
1743	NF T60-106	61.5		0.03	
1854		-----		-----	
1875		-----		-----	
1888	D5185	65.67		0.48	
1900	D5185	72.45	C	1.21	first reported 0
1957	D5185	<1		<-6.49	possibly a false negative test result?
1981	D5185	55.8		-0.58	
6016	D5185	59.54		-0.18	
6080	D5185	66.6		0.58	
6273	D5185	57.70		-0.38	
6322	DIN51418	59		-0.24	
6402		-----		-----	
6414	D5185	66.4		0.56	
6497	DIN51399-2Mod.	58.4		-0.30	

normality	suspect
n	33
outliers	1
mean (n)	61.230
st.dev. (n)	4.3524
R(calc.)	12.187
st.dev.(D5185:18)	9.2833
R(D5185:18)	25.993

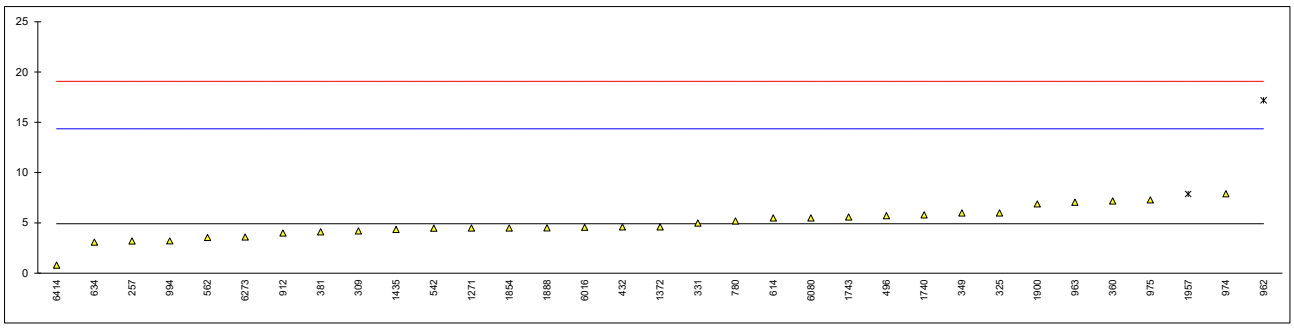

100
90
80
70
60
50
40
30
20
994
1981
1146
1271
360
542
6273
614
1435
1372
331
6497
339
962
6322
496
975
6016
349
309
432
974
1743
901
634
963
325
912
1888
6414
6080
257
1740
1900

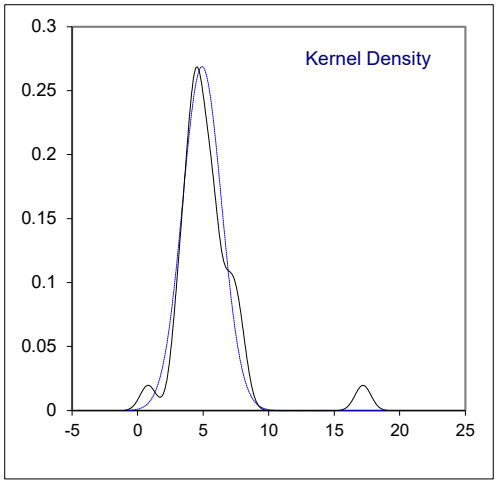

Kernel Density
0.12
0.1
0.08
0.06
0.04
0.02
0
30
50
70
90

Determination of Boron as B on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	3.20		-0.36	
309	D5185	4.217		-0.15	
325	D5185	6		0.23	
331	D5185	5		0.02	
339	INH-047	<50		-----	
349	D5185	6		0.23	
360	D5185	7.18		0.48	
381	D5185	4.11		-0.17	
432	D5185	4.6		-0.07	
451		-----		-----	
496	D5185	5.72		0.17	
542	D6595	4.48		-0.09	
562	D6595	3.55		-0.29	
614	D5185	5.5		0.12	
633		-----		-----	
634	D6595	3.1		-0.39	
780	D5185	5.2		0.06	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912	D5185	4		-0.20	
962	D5185	17.2	R(0.01)	2.60	
963	D5185	7.05		0.45	
974	D5185	7.9		0.63	
975	D5185	7.29		0.50	
994	D5185	3.22		-0.36	
1059		-----		-----	
1146		-----		-----	
1271		4.5		-0.09	
1372	D5185	4.62		-0.06	
1414		-----		-----	
1435	D5185	4.348		-0.12	
1740	D5185	5.8		0.19	
1743	NF T60-106	5.6		0.14	
1854	D5185	4.5		-0.09	
1875		-----		-----	
1888	D5185	4.51		-0.09	
1900	D5185	6.89	C	0.42	first reported 8.162
1957	D5185	7.878	ex	0.63	excluded as many statistical outliers in related metal analyzes
1981		-----		-----	
6016	D5185	4.564		-0.08	
6080	D5185	5.5		0.12	
6273	D5185	3.6		-0.28	
6322		-----		-----	
6402		-----		-----	
6414	D5185	0.80	C	-0.87	first reported 0.8
6497		-----		-----	

normality	OK
n	31
outliers	1 + 1ex
mean (n)	4.921
st.dev. (n)	1.4844
R(calc.)	4.156
st.dev.(D5185:18)	4.7174
R(D5185:18)	13.209

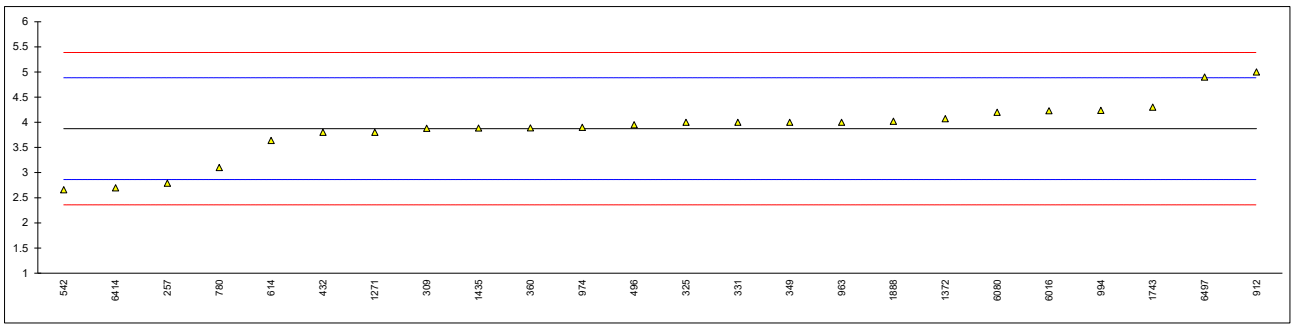

25
20
15
10
5
0
6414
634
257
994
562
6273
912
381
309
1435
542
1271
1854
1888
6016
432
1372
331
780
614
6080
1743
496
1740
349
325
1900
963
360
975
1957
974
962

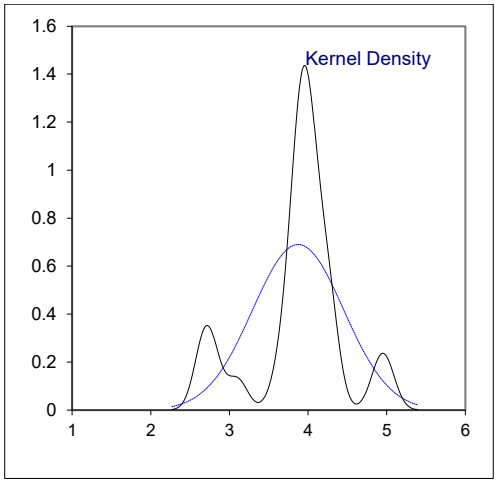

Kernel Density
0.3
0.25
0.2
0.15
0.1
0.05
0
-5
0
5
10
15
20
25

Determination of Cadmium as Cd on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	2.79		-2.14	
309	D5185	3.880		0.01	
325	D5185	4		0.25	
331	D5185	4		0.25	
339	INH-047	<5		-----	
349	D5185	4		0.25	
360	D5185	3.89		0.03	
381		-----		-----	
432	D5185	3.8		-0.14	
451		-----		-----	
496	D5185	3.95		0.15	
542	D6595	2.66		-2.40	
562		-----		-----	
614	D5185	3.64		-0.46	
633		-----		-----	
634		-----		-----	
780	D5185	3.1		-1.53	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912	D5185	5		2.23	
962		-----		-----	
963	D5185	4.0		0.25	
974	D5185	3.9		0.05	
975		-----		-----	
994	D5185	4.24		0.73	
1059		-----		-----	
1146		-----		-----	
1271		3.8		-0.14	
1372	D5185	4.07		0.39	
1414		-----		-----	
1435	D5185	3.885		0.02	
1740		-----		-----	
1743	NF T60-106	4.3		0.84	
1854		-----		-----	
1875		-----		-----	
1888	D5185	4.02		0.29	
1900		-----		-----	
1957		-----		-----	
1981		-----		-----	
6016	D5185	4.231		0.71	
6080	D5185	4.2		0.65	
6273		-----		-----	
6322	DIN51418	<10	C	-----	first reported 6
6402		-----		-----	
6414	D5185	2.7		-2.32	
6497	DIN51399-2Mod.	4.9		2.03	

normality	OK
n	24
outliers	0
mean (n)	3.873
st.dev. (n)	0.5783
R(calc.)	1.619
st.dev.(Horwitz)	0.5054
R(Horwitz)	1.415

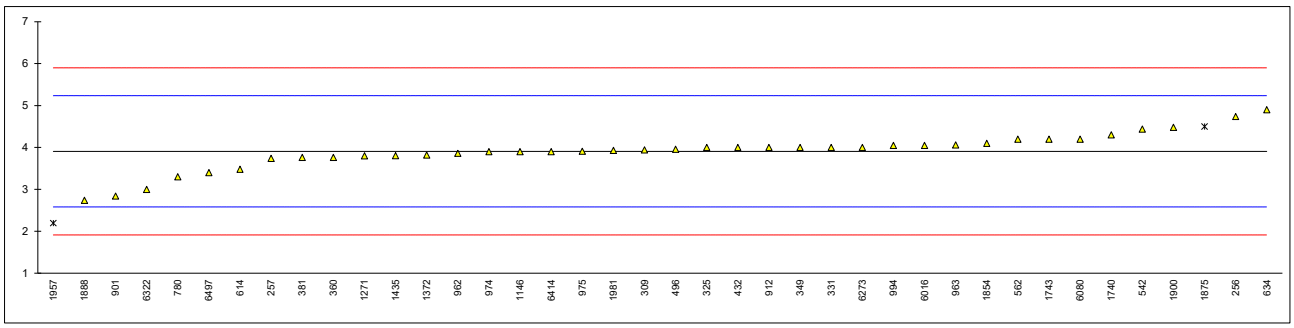

6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
542
6414
257
780
614
432
1271
309
1435
360
974
496
325
331
349
963
1888
1372
6080
6016
994
1743
6497
912

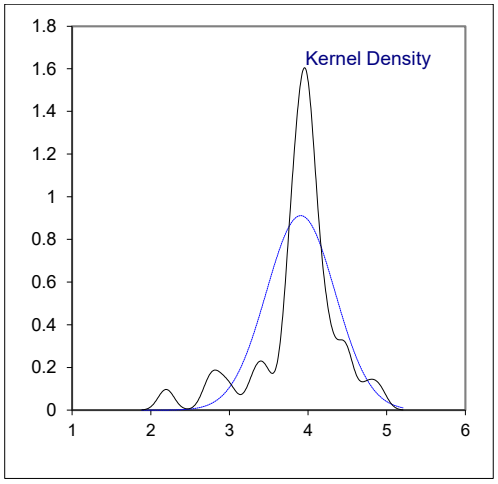

Kernel Density
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6

Determination of Chromium as Cr on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		4.74		1.25	
257	D6595	3.74		-0.25	
309	D5185	3.942		0.05	
325	D5185	4		0.14	
331	D5185	4		0.14	
339	INH-047	<5		-----	
349	D5185	4		0.14	
360	D5185	3.76		-0.22	
381	D5185	3.76		-0.22	
432	D5185	4.0		0.14	
451		-----		-----	
496	D5185	3.96		0.08	
542	D6595	4.44		0.80	
562	D6595	4.20		0.44	
614	D5185	3.48		-0.64	
633		-----		-----	
634	D6595	4.9	C	1.49	first reported 5.8
780	D5185	3.3		-0.91	
862		-----		-----	
863		-----		-----	
901	D5185	2.84		-1.61	
912	D5185	4		0.14	
962	D5185	3.86		-0.07	
963	D5185	4.06		0.23	
974	D5185	3.9		-0.01	
975	D5185	3.91		0.00	
994	D5185	4.05		0.22	
1059	In house	<4		-----	
1146	D5185	3.9		-0.01	
1271		3.8		-0.16	
1372	D5185	3.82		-0.13	
1414		-----		-----	
1435	D5185	3.804		-0.16	
1740	D5185	4.3		0.59	
1743	NF T60-106	4.2		0.44	
1854	D5185	4.1		0.29	
1875		4.5	ex	0.89	excluded as many statistical outliers in related metal analyzes
1888	D5185	2.74		-1.76	
1900	D5185	4.48	C	0.86	first reported 0
1957	D5185	2.195	C,R(0.05)	-2.58	first reported 1.323
1981	D5185	3.93		0.03	
6016	D5185	4.051		0.22	
6080	D5185	4.2		0.44	
6273	D5185	4.0	C	0.14	first reported 0.15
6322	DIN51418	3		-1.37	
6402		-----		-----	
6414	D5185	3.9		-0.01	
6497	DIN51399-2Mod.	3.4		-0.76	

normality	suspect
n	38
outliers	1 + 1ex
mean (n)	3.907
st.dev. (n)	0.4379
R(calc.)	1.226
st.dev.(D5185:18)	0.6643
R(D5185:18)	1.860

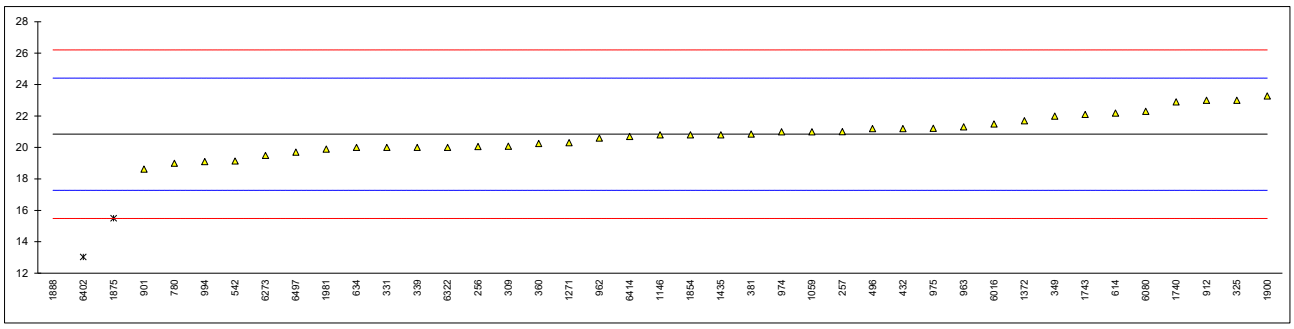

7
6
5
4
3
2
1
1957
1888
901
6322
780
6497
614
257
381
360
1271
1435
1372
962
974
1146
6414
975
1981
309
496
325
432
912
349
331
6273
994
6016
963
1854
562
1743
6080
1740
542
1900
1875
256
634

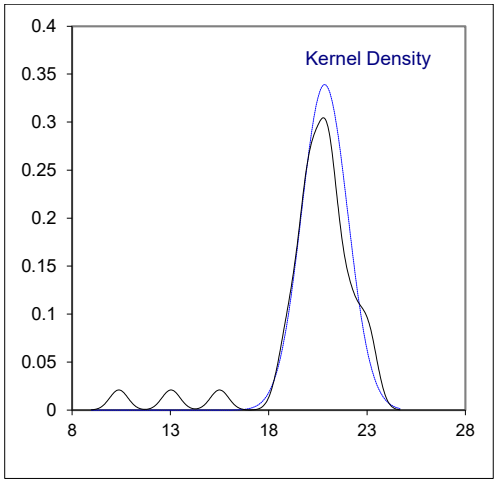

Kernel Density
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6

Determination of Copper as Cu on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		20.06		-0.44	
257	D6595	21.01		0.09	
309	D5185	20.077		-0.43	
325	D5185	23		1.21	
331	D5185	20		-0.47	
339	INH-047	20		-0.47	
349	D5185	22		0.65	
360	D5185	20.26		-0.33	
381	INH-118	20.85		0.00	
432	D5185	21.2		0.20	
451		-----		-----	
496	D5185	21.2		0.20	
542	D6595	19.14		-0.95	
562		-----		-----	
614	D5185	22.19		0.75	
633		-----		-----	
634	D6595	20		-0.47	
780	D5185	19		-1.03	
862		-----		-----	
863		-----		-----	
901	D5185	18.62		-1.25	
912	D5185	23		1.21	
962	D5185	20.6		-0.14	
963	D5185	21.31		0.26	
974	D5185	21		0.09	
975	D5185	21.22		0.21	
994	D5185	19.1		-0.98	
1059	In house	21		0.09	
1146	D5185	20.8		-0.03	
1271		20.3		-0.31	
1372	D5185	21.70		0.48	
1414		-----		-----	
1435	D5185	20.802		-0.02	
1740	D5185	22.9		1.15	
1743	NF T60-106	22.1		0.70	
1854	D5185	20.8		-0.03	
1875		15.5	R(0.01)	-2.99	
1888	D5185	10.38	R(0.01)	-5.86	
1900	D5185	23.28	C	1.36	first reported 1.851
1957	D5185	<1		<-11.11	possibly a false negative test result?
1981	D5185	19.9		-0.53	
6016	D5185	21.50		0.37	
6080	D5185	22.3		0.81	
6273	D5185	19.50		-0.75	
6322	DIN51418	20		-0.47	
6402	D5863	13.035	C,R(0.01)	-4.37	first reported 11.72
6414	D5185	20.7		-0.08	
6497	DIN51399-2Mod.	19.7		-0.64	

normality	OK
n	38
outliers	3
mean (n)	20.845
st.dev. (n)	1.1767
R(calc.)	3.295
st.dev.(D5185:18)	1.7867
R(D5185:18)	5.003

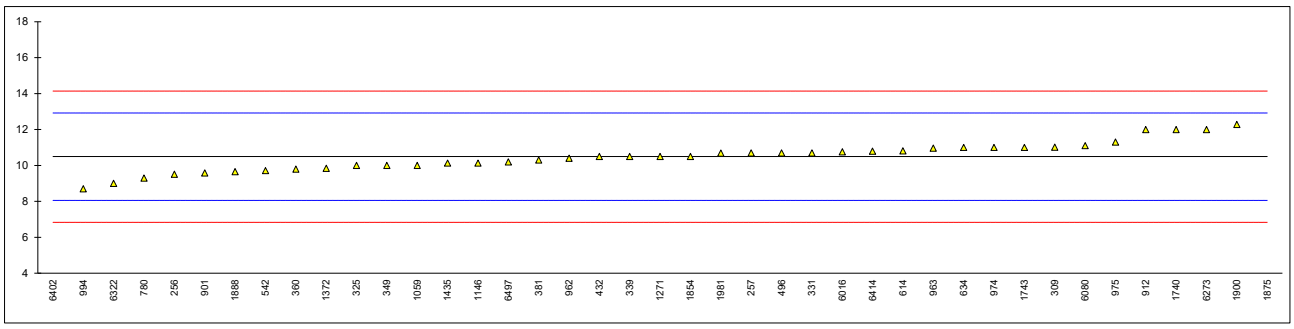

28
26
24
22
20
18
16
14
12
1888
6402
1875
901
780
994
542
6273
6497
1981
634
331
339
6322
256
309
360
1271
962
6414
1146
1854
1435
381
974
1059
257
496
432
975
963
6016
1372
349
1743
614
6080
1740
912
325
1900

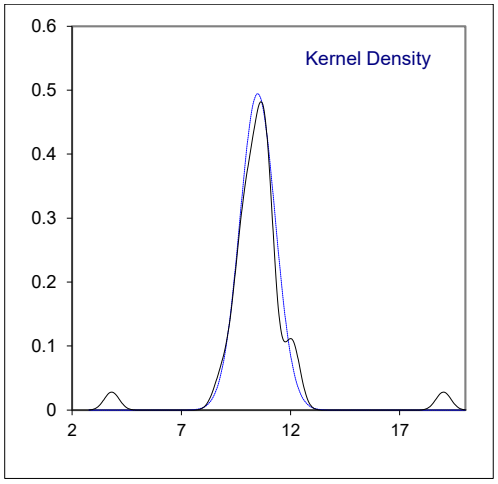

Kernel Density
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
8
13
18
23
28

Determination of Iron as Fe on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		9.51		-0.80	
257	D6595	10.70		0.17	
309	D5185	11.020		0.44	
325	D5185	10		-0.40	
331	D5185	10.7		0.17	
339	INH-047	10.5		0.01	
349	D5185	10		-0.40	
360	D5185	9.79		-0.57	
381	D5185	10.3		-0.15	
432	D5185	10.5		0.01	
451		-----		-----	
496	D5185	10.7		0.17	
542	D6595	9.71		-0.64	
562		-----		-----	
614	D5185	10.81		0.26	
633		-----		-----	
634	D6595	11		0.42	
780	D5185	9.3		-0.98	
862		-----		-----	
863		-----		-----	
901	D5185	9.58		-0.75	
912	D5185	12		1.24	
962	D5185	10.4		-0.07	
963	D5185	10.96		0.39	
974	D5185	11		0.42	
975	D5185	11.30		0.67	
994	D5185	8.70		-1.47	
1059	In house	10		-0.40	
1146	D5185	10.13		-0.29	
1271		10.5		0.01	
1372	D5185	9.84		-0.53	
1414		-----		-----	
1435	D5185	10.127		-0.30	
1740	D5185	12		1.24	
1743	NF T60-106	11		0.42	
1854	D5185	10.5		0.01	
1875		19.0	R(0.01)	6.99	
1888	D5185	9.65		-0.69	
1900	D5185	12.28	C	1.47	first reported 0.875
1957	D5185	<1		<-7.79	possibly a false negative test result?
1981	D5185	10.69		0.17	
6016	D5185	10.76		0.22	
6080	D5185	11.1		0.50	
6273	D5185	12.0	C	1.24	first reported 6.66
6322	DIN51418	9		-1.22	
6402	D5863	3.805	C,R(0.01)	-5.49	first reported 4.285
6414	D5185	10.8		0.26	
6497	DIN51399-2Mod.	10.2		-0.24	

normality	OK
n	39
outliers	2
mean (n)	10.489
st.dev. (n)	0.8073
R(calc.)	2.260
st.dev.(D5185:18)	1.2174
R(D5185:18)	3.409

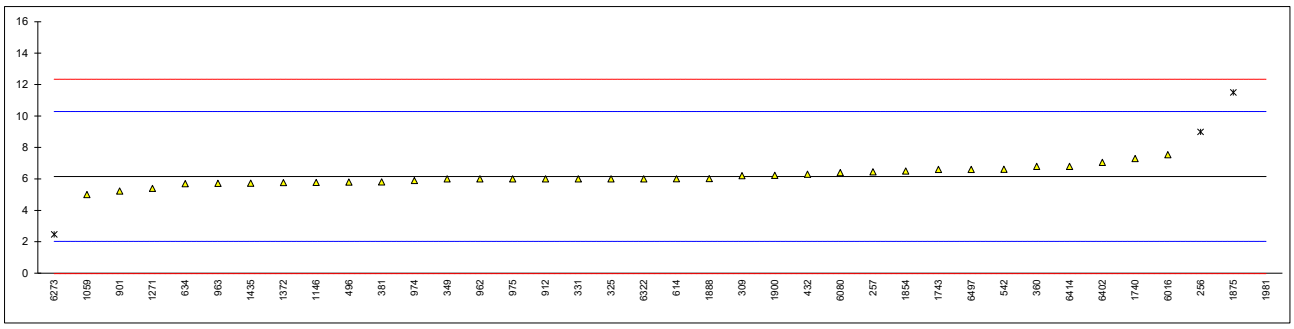

18
16
14
12
10
8
6
4
6402
994
6322
780
256
901
1888
542
360
1372
325
349
1059
1435
1146
6497
381
962
432
339
1271
1854
1981
257
496
331
6016
6414
614
963
634
974
1743
309
6080
975
912
1740
6273
1900
1875

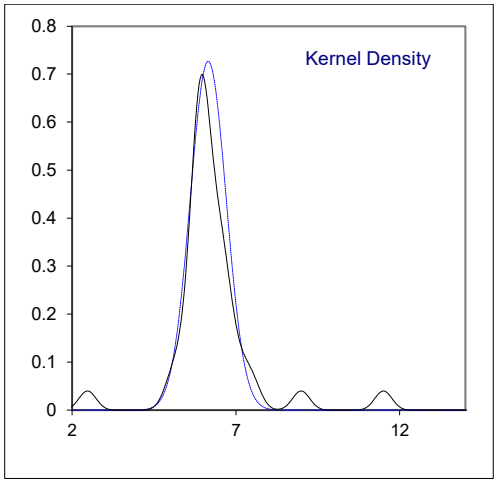

Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
2
7
12
17

Determination of Lead as Pb on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		8.99	R(0.01)	1.38	
257	D6595	6.45		0.14	
309	D5185	6.205		0.02	
325	D5185	6		-0.07	
331	D5185	6		-0.07	
339		-----		-----	
349	D5185	6		-0.07	
360	D5185	6.80		0.31	
381	D5185	5.81		-0.17	
432	D5185	6.3		0.07	
451		-----		-----	
496	D5185	5.8		-0.17	
542	D6595	6.61		0.22	
562		-----		-----	
614	D5185	6.01		-0.07	
633		-----		-----	
634	D6595	5.7		-0.22	
780	D5185	< 10		-----	
862		-----		-----	
863		-----		-----	
901	D5185	5.23		-0.45	
912	D5185	6		-0.07	
962	D5185	6.0		-0.07	
963	D5185	5.72		-0.21	
974	D5185	5.9		-0.12	
975	D5185	6.00		-0.07	
994	D5185	<10		-----	
1059	In house	5		-0.56	
1146	D5185	5.77		-0.19	
1271		5.4		-0.37	
1372	D5185	5.76		-0.19	
1414		-----		-----	
1435	D5185	5.731		-0.21	
1740	D5185	7.3		0.56	
1743	NF T60-106	6.6		0.22	
1854	D5185	6.5		0.17	
1875		11.5	R(0.01)	2.59	
1888	D5185	6.02		-0.07	
1900	D5185	6.23	C	0.04	first reported 4.51
1957	D5185	<1		-----	
1981	D5185	20.41	C,R(0.01)	6.92	first reported 17.21
6016	D5185	7.547		0.68	
6080	D5185	6.4		0.12	
6273	D5185	2.47	R(0.01)	-1.79	
6322	DIN51418	6		-0.07	
6402	D5863	7.05		0.43	
6414	D5185	6.8		0.31	
6497	DIN51399-2Mod.	6.6		0.22	

normality	OK
n	34
outliers	4
mean (n)	6.154
st.dev. (n)	0.5488
R(calc.)	1.537
st.dev.(D5185:18)	2.0609
R(D5185:18)	5.771

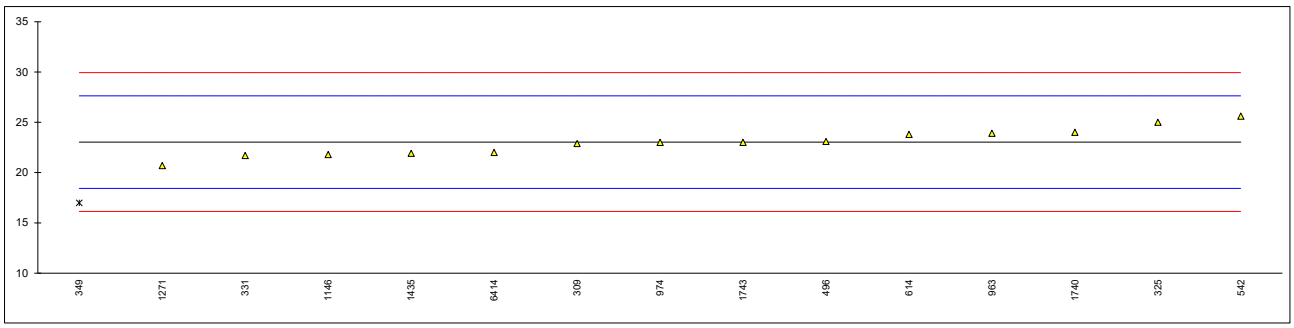

16
14
12
10
8
6
4
2
0
6273
1059
901
1271
634
963
1435
1372
1146
496
381
974
349
962
975
912
331
325
6322
614
1888
309
1900
432
6080
257
1854
1743
6497
542
360
6414
6402
1740
6016
256
1875
1981

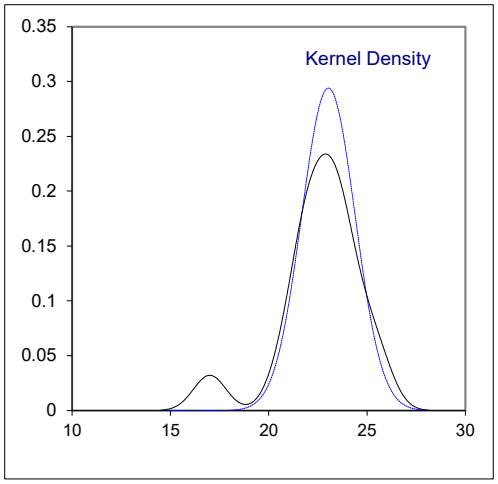

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2
7
12

Determination of Lithium as Li on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257		-----		-----	
309	D5185	22.886		-0.06	
325	D5185	25		0.86	
331	D5185	21.7		-0.58	
339	INH-047	<50		-----	
349	D5185	17	D(0.01)	-2.62	
360		-----		-----	
381		-----		-----	
432		-----		-----	
451		-----		-----	
496	D5185	23.1		0.03	
542	D6595	25.62		1.13	
562		-----		-----	
614	D5185	23.8		0.33	
633		-----		-----	
634		-----		-----	
780		-----		-----	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912		-----		-----	
962		-----		-----	
963	D5185	23.92		0.39	
974	D5185	23		-0.01	
975		-----		-----	
994		-----		-----	
1059		-----		-----	
1146	D5185	21.8		-0.54	
1271		20.7		-1.01	
1372		-----		-----	
1414		-----		-----	
1435	D5185	21.922		-0.48	
1740	D5185	24		0.42	
1743	NF T60-106	23		-0.01	
1854		-----		-----	
1875		-----		-----	
1888		-----		-----	
1900		-----		-----	
1957		-----		-----	
1981		-----		-----	
6016		-----		-----	
6080		-----		-----	
6273		-----		-----	
6322		-----		-----	
6402		-----		-----	
6414	D5185	22.0		-0.45	
6497		-----		-----	

normality	OK
n	14
outliers	1
mean (n)	23.032
st.dev. (n)	1.3571
R(calc.)	3.800
st.dev.(Horwitz)	2.2983
R(Horwitz)	6.435

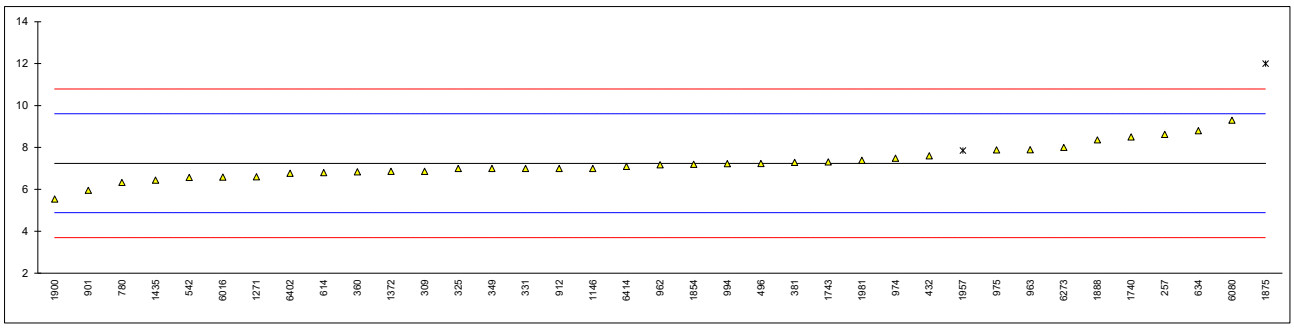

35
30
25
20
15
10
349
1271
331
1146
1435
6414
309
974
1743
496
614
963
1740
325
542

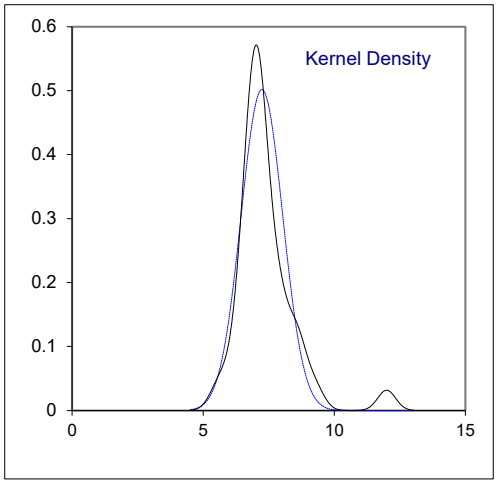

Kernel Density
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
10
15
20
25
30

Determination of Magnesium as Mg on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	8.62		1.17	
309	D5185	6.863		-0.32	
325	D5185	7		-0.21	
331	D5185	7		-0.21	
339	INH-047	<50		-----	
349	D5185	7		-0.21	
360	D5185	6.840		-0.34	
381	D5185	7.29		0.04	
432	D5185	7.6		0.30	
451		-----		-----	
496	D5185	7.233		-0.01	
542	D6595	6.57		-0.57	
562		-----		-----	
614	D5185	6.8		-0.38	
633		-----		-----	
634	D6595	8.8	C	1.32	first reported 10
780	D5185	6.33		-0.77	
862		-----		-----	
863		-----		-----	
901	D5185	5.96		-1.09	
912	D5185	7		-0.21	
962	D5185	7.18		-0.05	
963	D5185	7.89		0.55	
974	D5185	7.49		0.21	
975	D5185	7.88		0.54	
994	D5185	7.23		-0.01	
1059		-----		-----	
1146	D5185	7		-0.21	
1271		6.6		-0.54	
1372	D5185	6.86		-0.32	
1414		-----		-----	
1435	D5185	6.442		-0.68	
1740	D5185	8.5		1.06	
1743	NF T60-106	7.31		0.06	
1854	D5185	7.2		-0.04	
1875		12.0	R(0.01)	4.03	
1888	D5185	8.36		0.94	
1900	D5185	5.54	C	-1.44	first reported 0.3555
1957	D5185	7.853	ex	0.52	excluded as many statistical outliers in related metal analyzes
1981	D5185	7.39	C	0.12	first reported 0
6016	D5185	6.582		-0.56	
6080	D5185	9.3		1.74	
6273	D5185	8.0	C	0.64	first reported 5.09
6322	DIN51418	<10		-----	
6402	D5863	6.77		-0.40	
6414	D5185	7.1		-0.12	
6497	DIN51399-2Mod.	<14		-----	

normality	OK
n	35
outliers	1 + 1ex
mean (n)	7.244
st.dev. (n)	0.7955
R(calc.)	2.227
st.dev.(D5185:18)	1.1813
R(D5185:18)	3.308

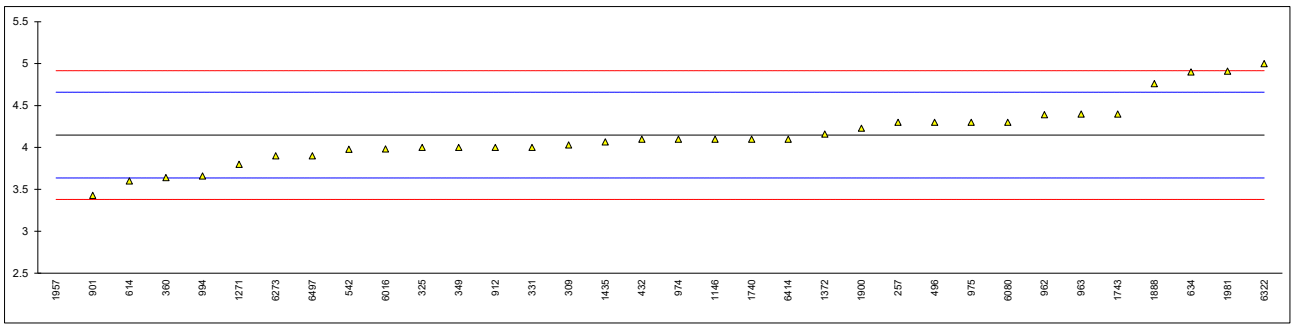

14
12
10
8
6
4
2
1900
901
780
1435
542
6016
1271
6402
614
360
1372
309
325
349
331
912
1146
6414
962
1854
994
496
381
1743
1981
974
432
1957
975
963
6273
1888
1740
257
634
6080
1875

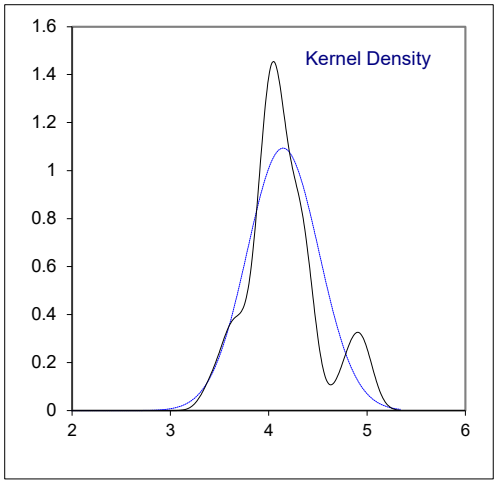

Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15

Determination of Manganese as Mn on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	4.30	C	0.60	first reported 5.45
309	D5185	4.030		-0.46	
325	D5185	4		-0.57	
331	D5185	4		-0.57	
339	INH-047	<5		-----	
349	D5185	4		-0.57	
360	D5185	3.64		-1.98	
381		-----		-----	
432	D5185	4.1		-0.18	
451		-----		-----	
496	D5185	4.3		0.60	
542	D6595	3.98		-0.65	
562		-----		-----	
614	D5185	3.6		-2.14	
633		-----		-----	
634	D6595	4.9		2.94	
780	D5185	< 5.0		-----	
862		-----		-----	
863		-----		-----	
901	D5185	3.43		-2.80	
912	D5185	4		-0.57	
962	D5185	4.39		0.95	
963	D5185	4.4		0.99	
974	D5185	4.1		-0.18	
975	D5185	4.3		0.60	
994	D5185	3.66		-1.90	
1059		-----		-----	
1146	D5185	4.1		-0.18	
1271		3.8		-1.35	
1372	D5185	4.16		0.05	
1414		-----		-----	
1435	D5185	4.065		-0.32	
1740	D5185	4.1		-0.18	
1743	NF T60-106	4.4		0.99	
1854		-----		-----	
1875		-----		-----	
1888	D5185	4.76		2.40	
1900	D5185	4.23	C	0.33	first reported 0
1957	D5185	1.410	C,R(0.01)	-10.70	first reported 1.486
1981	D5185	4.91		2.98	
6016	D5185	3.983		-0.64	
6080	D5185	4.3		0.60	
6273	D5185	3.9	C	-0.96	first reported <1
6322	DIN51418	5		3.34	
6402		-----		-----	
6414	D5185	4.1		-0.18	
6497	DIN51399-2Mod.	3.9		-0.96	

normality	OK
n	33
outliers	1
mean (n)	4.147
st.dev. (n)	0.3650
R(calc.)	1.022
st.dev.(D5185:18)	0.2559
R(D5185:18)	0.716

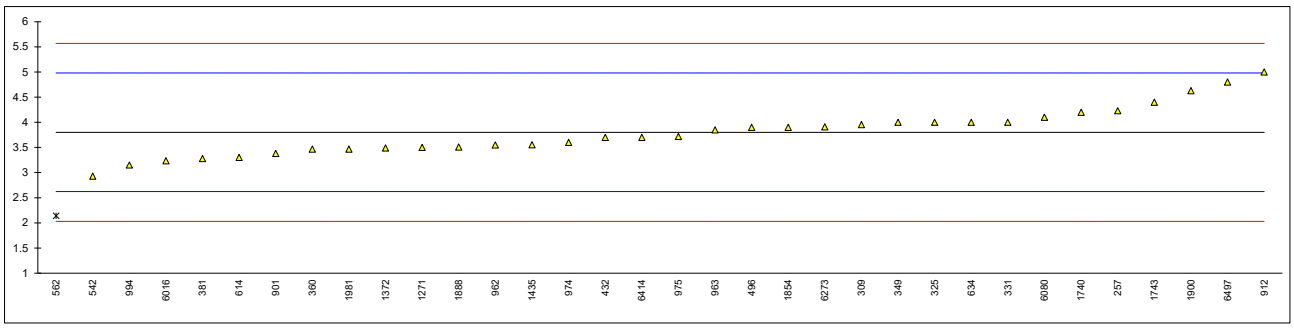

5.5
5
4.5
4
3.5
3
2.5
1957
901
614
360
994
1271
6273
6497
542
6016
325
349
912
331
309
1435
432
974
1146
1740
6414
1372
1900
257
496
975
6080
962
963
1743
1888
634
1981
6322

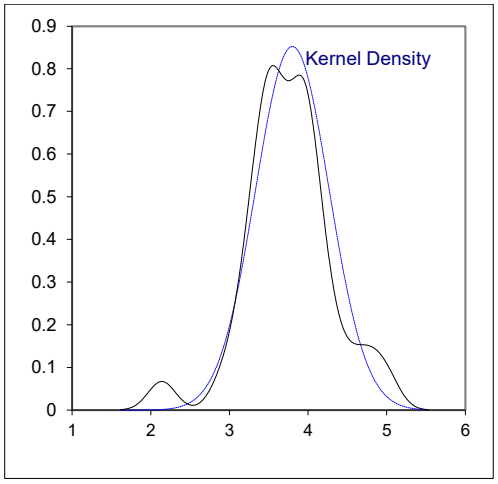

Kernel Density
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2
3
4
5
6

Determination of Molybdenum as Mo on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	4.23		0.73	
309	D5185	3.955		0.26	
325	D5185	4		0.34	
331	D5185	4		0.34	
339	INH-047	<5		-----	
349	D5185	4		0.34	
360	D5185	3.47		-0.56	
381	D5185	3.28		-0.88	
432	D5185	3.7		-0.17	
451		-----		-----	
496	D5185	3.9		0.17	
542	D6595	2.93		-1.48	
562	D6595	2.14	R(0.05)	-2.82	
614	D5185	3.30		-0.85	
633		-----		-----	
634	D6595	4.0		0.34	
780	D5185	< 5.0		-----	
862		-----		-----	
863		-----		-----	
901	D5185	3.38		-0.71	
912	D5185	5		2.03	
962	D5185	3.55		-0.42	
963	D5185	3.85		0.08	
974	D5185	3.6		-0.34	
975	D5185	3.72		-0.14	
994	D5185	3.15		-1.10	
1059		-----		-----	
1146		-----		-----	
1271		3.5		-0.51	
1372	D5185	3.49		-0.53	
1414		-----		-----	
1435	D5185	3.553		-0.42	
1740	D5185	4.2		0.68	
1743	NF T60-106	4.4		1.02	
1854	D5185	3.9		0.17	
1875		-----		-----	
1888	D5185	3.51		-0.49	
1900	D5185	4.63	C	1.41	first reported 0
1957	D5185	<1		<-4.75	possibly a false negative test result?
1981	D5185	3.47		-0.56	
6016	D5185	3.236		-0.96	
6080	D5185	4.1		0.51	
6273	D5185	3.91		0.19	
6322	DIN51418	<10	C	-----	first reported 6
6402		-----		-----	
6414	D5185	3.7		-0.17	
6497	DIN51399-2Mod.	4.8		1.69	

normality	OK
n	33
outliers	1
mean (n)	3.800
st.dev. (n)	0.4682
R(calc.)	1.311
st.dev.(D5185:18)	0.5898
R(D5185:18)	1.651

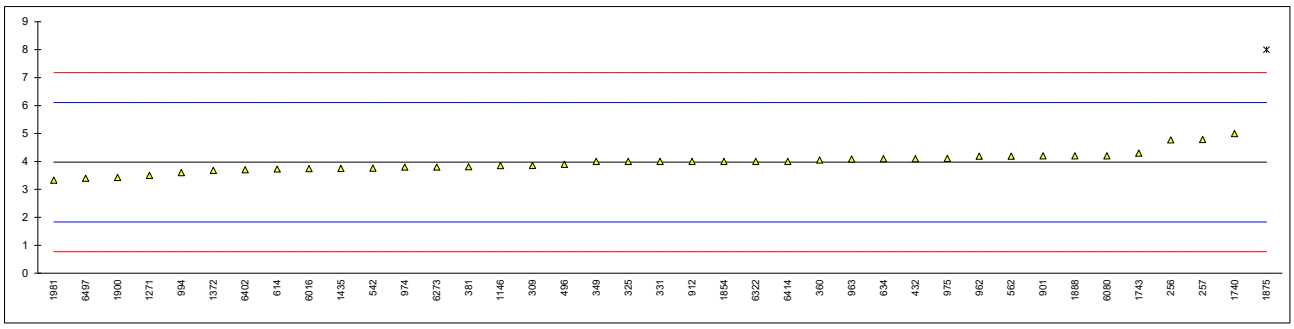

6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
562
542
994
6016
381
614
901
360
1981
1372
1271
1888
962
1435
974
432
6414
975
963
496
1854
6273
309
349
325
634
331
6080
1740
257
1743
1900
6497
912

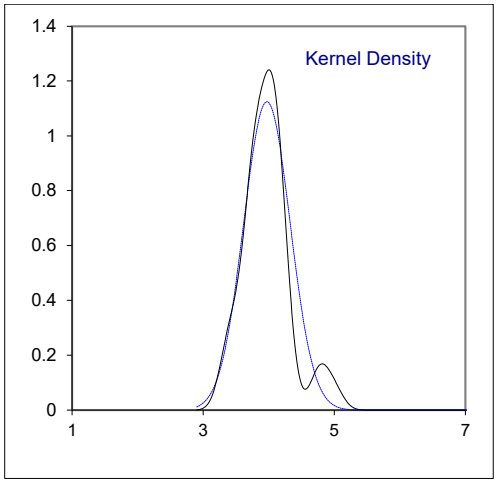

Kernel Density
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1
2
3
4
5
6

Determination of Nickel as Ni on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		4.77		0.75	
257	D6595	4.78		0.76	
309	D5185	3.859		-0.11	
325	D5185	4		0.03	
331	D5185	4		0.03	
339	INH-047	<5		-----	
349	D5185	4		0.03	
360	D5185	4.05		0.07	
381	D5185	3.81		-0.15	
432	D5185	4.1		0.12	
451		-----		-----	
496	D5185	3.9		-0.07	
542	D6595	3.76		-0.20	
562	D6595	4.19		0.20	
614	D5185	3.73		-0.23	
633		-----		-----	
634	D6595	4.1		0.12	
780	D5185	< 5.0		-----	
862		-----		-----	
863		-----		-----	
901	D5185	4.20		0.21	
912	D5185	4		0.03	
962	D5185	4.19		0.20	
963	D5185	4.09		0.11	
974	D5185	3.8		-0.16	
975	D5185	4.11		0.13	
994	D5185	3.60		-0.35	
1059		-----		-----	
1146	D5185	3.85		-0.11	
1271		3.5		-0.44	
1372	D5185	3.68		-0.27	
1414		-----		-----	
1435	D5185	3.748		-0.21	
1740	D5185	5		0.96	
1743	NF T60-106	4.3		0.31	
1854	D5185	4.0		0.03	
1875		8.0	R(0.01)	3.77	
1888	D5185	4.20		0.21	
1900	D5185	3.43	C	-0.51	first reported 0
1957	D5185	<1		-----	
1981	D5185	3.33		-0.60	
6016	D5185	3.747		-0.21	
6080	D5185	4.2		0.21	
6273	D5185	3.8	C	-0.16	first reported <1
6322	DIN51418	4		0.03	
6402	D5863	3.705		-0.25	
6414	D5185	4.0		0.03	
6497	DIN51399-2Mod.	3.4		-0.54	

normality	suspect
n	38
outliers	1
mean (n)	3.972
st.dev. (n)	0.3547
R(calc.)	0.993
st.dev.(D5185:18)	1.0676
R(D5185:18)	2.989

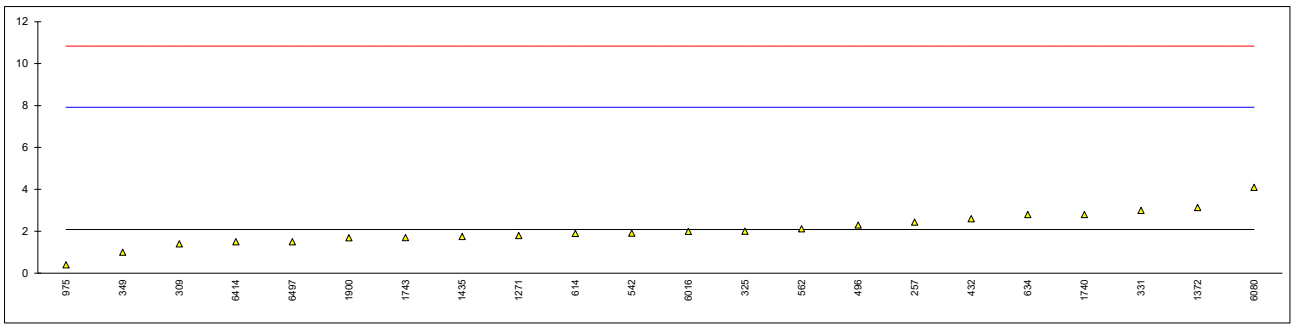

9
8
7
6
5
4
3
2
1
0
1981
6497
1900
1271
994
1372
6402
614
6016
1435
542
974
6273
381
1146
309
496
349
325
331
912
1854
6322
6414
360
963
634
432
975
962
562
901
1888
6080
1743
256
257
1740
1875

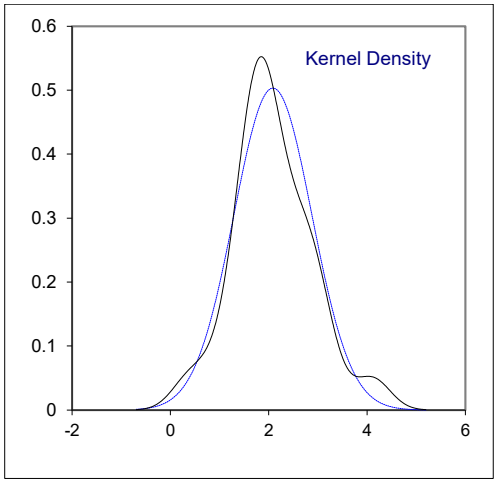

Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
3
5
7

Determination of Potassium as K on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	2.44		0.12	
309	D5185	1.406		-0.23	
325	D5185	2		-0.03	
331	D5185	3		0.31	
339	INH-047	<50		-----	
349	D5185	1		-0.37	
360	D5185	< 1.0		-----	
381		-----		-----	
432	D5185	2.6		0.18	
451		-----		-----	
496	D5185	2.3		0.07	
542	D6595	1.91		-0.06	
562	D6595	2.12		0.01	
614	D5185	1.9		-0.06	
633		-----		-----	
634	D6595	2.8		0.25	
780	D5185	< 40		-----	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912		-----		-----	
962		-----		-----	
963	D5185	<0.10		-----	
974	D5185	<1		-----	
975	D5185	0.40		-0.58	
994	D5185	<40		-----	
1059		-----		-----	
1146		-----		-----	
1271		1.8		-0.10	
1372	D5185	3.14		0.36	
1414		-----		-----	
1435	D5185	1.759		-0.11	
1740	D5185	2.8		0.25	
1743	NF T60-106	1.7		-0.13	
1854		-----		-----	
1875		-----		-----	
1888		-----		-----	
1900	D5185	1.69	C	-0.14	first reported 0
1957	D5185	<1		-----	
1981		-----		-----	
6016	D5185	1.995		-0.03	
6080	D5185	4.1		0.69	
6273	D5185	<1	C	-----	first reported 15.01
6322	DIN51418	<10		-----	
6402		-----		-----	
6414	D5185	1.5		-0.20	
6497	DIN51399-2Mod.	1.5		-0.20	

normality	suspect
n	22
outliers	0
mean (n)	2.085
st.dev. (n)	0.7930
R(calc.)	2.220
st.dev.(D5185:18)	2.9167
R(D5185:18)	8.167

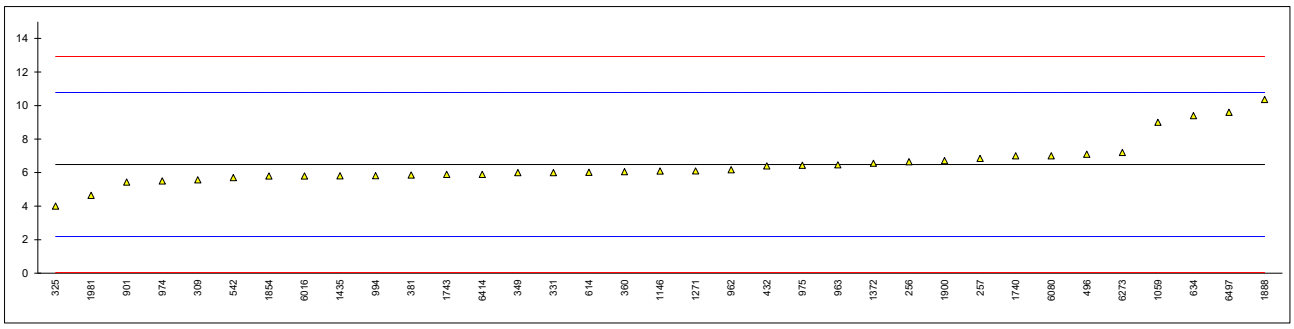

12
10
8
6
4
2
0
975
349
309
6414
6497
1900
1743
1435
1271
614
542
6016
325
562
496
257
432
634
1740
331
1372
6080

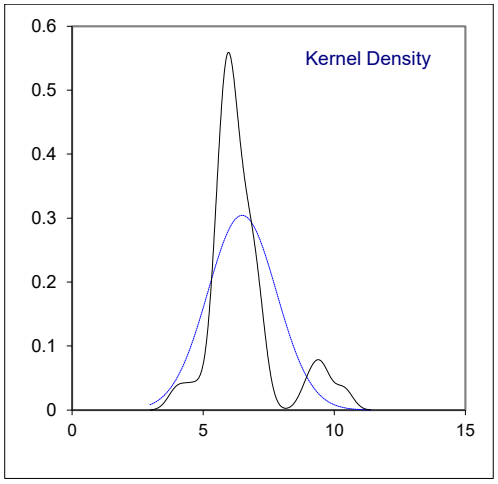

Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
-2
0
2
4
6

Determination of Silicon as Si on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		6.65		0.08	
257	D6595	6.85		0.17	
309	D5185	5.573		-0.42	
325	D5185	4	C	-1.16	first reported 8
331	D5185	6		-0.23	
339		-----		-----	
349	D5185	6		-0.23	
360	D5185	6.06		-0.20	
381	D5185	5.85		-0.30	
432	D5185	6.4		-0.04	
451		-----		-----	
496	D5185	7.1		0.29	
542	D6595	5.7		-0.36	
562		-----		-----	
614	D5185	6.02		-0.22	
633		-----		-----	
634	D6595	9.4	C	1.36	first reported 12
780	D5185	< 8.0		-----	
862		-----		-----	
863		-----		-----	
901	D5185	5.44		-0.49	
912		-----		-----	
962	D5185	6.17		-0.15	
963	D5185	6.46		-0.01	
974	D5185	5.5		-0.46	
975	D5185	6.44		-0.02	
994	D5185	5.82		-0.31	
1059	In house	9	C	1.17	first reported 12
1146	D5185	6.09		-0.18	
1271		6.1		-0.18	
1372	D5185	6.56		0.04	
1414		-----		-----	
1435	D5185	5.810		-0.31	
1740	D5185	7		0.24	
1743	NF T60-106	5.9		-0.27	
1854	D5185	5.8		-0.32	
1875		-----		-----	
1888	D5185	10.36		1.81	
1900	D5185	6.72	C	0.11	first reported 1.499
1957	D5185	<1		-----	
1981	D5185	4.65	C	-0.85	first reported 2.04
6016	D5185	5.804		-0.32	
6080	D5185	7.0		0.24	
6273	D5185	7.2	C	0.33	first reported 3.24
6322	DIN51418	<10		-----	
6402		-----		-----	
6414	D5185	5.9		-0.27	
6497	DIN51399-2Mod.	9.6		1.45	

normality	not OK
n	35
outliers	0
mean (n)	6.484
st.dev. (n)	1.3110
R(calc.)	3.671
st.dev.(D5185:18)	2.1471
R(D5185:18)	6.012

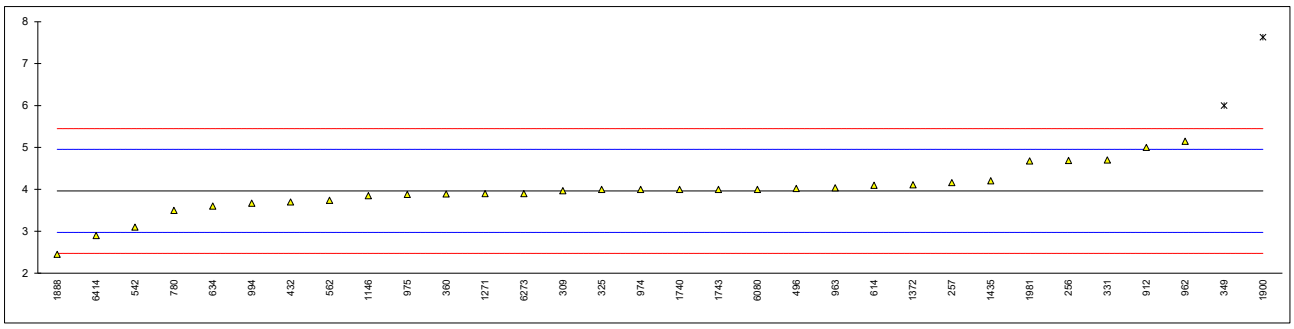

14
12
10
8
6
4
2
0
325
1981
901
974
309
542
1854
6016
1435
994
381
1743
6414
349
331
614
360
1146
1271
962
432
975
963
1372
256
1900
257
1740
6080
496
6273
1059
634
6497
1888

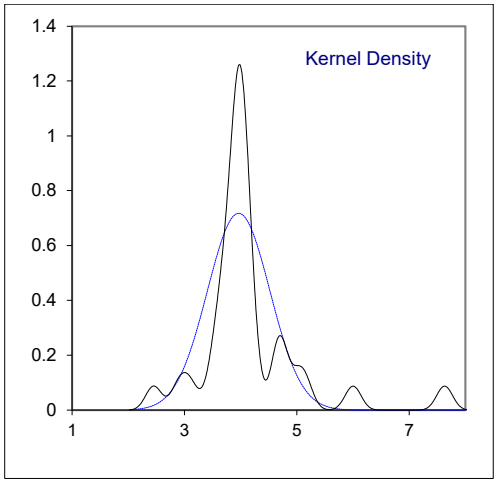

Kernel Density
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15

Determination of Silver as Ag on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		4.69		1.47	
257	D6595	4.16		0.40	
309	D5185	3.969		0.01	
325	D5185	4		0.07	
331	D5185	4.7		1.49	
339		-----		-----	
349	D5185	6	R(0.05)	4.11	
360	D5185	3.89		-0.15	
381		-----		-----	
432	D5185	3.7		-0.53	
451		-----		-----	
496	D5185	4.02		0.11	
542	D6595	3.1		-1.74	
562	D6595	3.74		-0.45	
614	D5185	4.1		0.28	
633		-----		-----	
634	D6595	3.6		-0.73	
780	D5185	3.5		-0.94	
862		-----		-----	
863		-----		-----	
901		-----		-----	
912	D5185	5		2.09	
962	D5185	5.15		2.40	
963	D5185	4.04		0.15	
974	D5185	4.0		0.07	
975	D5185	3.88		-0.17	
994	D5185	3.67		-0.59	
1059		-----		-----	
1146	D5185	3.85		-0.23	
1271		3.9		-0.13	
1372	D5185	4.11		0.30	
1414		-----		-----	
1435	D5185	4.203		0.48	
1740	D5185	4		0.07	
1743	NF T60-106	4.0		0.07	
1854		-----		-----	
1875		-----		-----	
1888	D5185	2.45		-3.05	
1900	D5185	7.63	C,R(0.01)	7.40	first reported 2.605
1957	D5185	<1		<-5.98	
1981	D5185	4.68		1.45	
6016		-----		-----	
6080	D5185	4.0		0.07	
6273	D5185	3.9	C	-0.13	first reported 0.46
6322	DIN51418	<10	C	-----	first reported 6
6402		-----		-----	
6414	D5185	2.9		-2.15	
6497		-----		-----	

normality	suspect
n	30
outliers	2
mean (n)	3.963
st.dev. (n)	0.5562
R(calc.)	1.557
st.dev.(D5185:18)	0.4954
R(D5185:18)	1.387

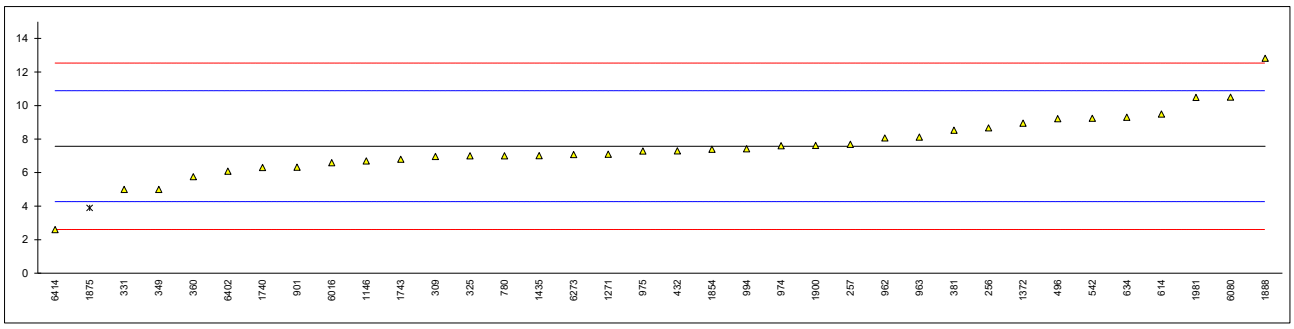

8
7
6
5
4
3
2
1888
6414
542
780
634
994
432
562
1146
975
360
1271
6273
309
325
974
1740
1743
6080
496
963
614
1372
257
1435
1981
256
331
912
962
349
1900


Kernel Density
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
3
5
7

Determination of Sodium as Na on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		8.67		0.66	
257	D6595	7.69		0.07	
309	D5185	6.967		-0.37	
325	D5185	7		-0.35	
331	D5185	5		-1.56	
339	INH-047	<50		-----	
349	D5185	5		-1.56	
360	D5185	5.76		-1.10	
381	D5185	8.53		0.58	
432	D5185	7.3		-0.16	
451		-----		-----	
496	D5185	9.21		0.99	
542	D6595	9.24		1.01	
562		-----		-----	
614	D5185	9.5		1.17	
633		-----		-----	
634	D6595	9.3		1.04	
780	D5185	7.0		-0.35	
862		-----		-----	
863		-----		-----	
901	D5185	6.32		-0.76	
912		-----		-----	
962	D5185	8.07		0.30	
963	D5185	8.12		0.33	
974	D5185	7.6		0.02	
975	D5185	7.29		-0.17	
994	D5185	7.42		-0.09	
1059		-----		-----	
1146	D5185	6.70		-0.53	
1271		7.1		-0.29	
1372	D5185	8.95		0.83	
1414		-----		-----	
1435	D5185	7.010		-0.34	
1740	D5185	6.3		-0.77	
1743	NF T60-106	6.8		-0.47	
1854	D5185	7.4		-0.10	
1875		3.9	ex	-2.22	excluded as many statistical outliers in related metal analyzes
1888	D5185	12.82		3.17	
1900	D5185	7.63	C	0.03	first reported 0
1957	D5185	<1		<-3.97	possibly a false negative test result?
1981	D5185	10.48	C	1.76	first reported 0
6016	D5185	6.595		-0.59	
6080	D5185	10.5		1.77	
6273	D5185	7.08		-0.30	
6322	DIN51418	<10		-----	
6402	D5863	6.085		-0.90	
6414	D5185	2.6		-3.01	
6497		-----		-----	

normality	not OK
n	35
outliers	0 + 1ex
mean (n)	7.572
st.dev. (n)	1.8172
R(calc.)	5.088
st.dev.(D5185:18)	1.6538
R(D5185:18)	4.631


14
12
10
8
6
4
2
0
6414
1875
331
349
360
6402
1740
901
6016
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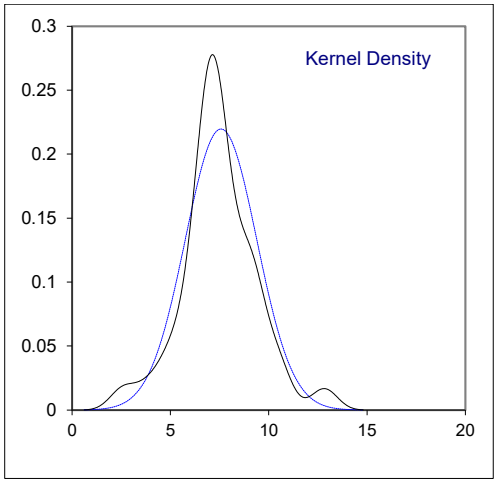
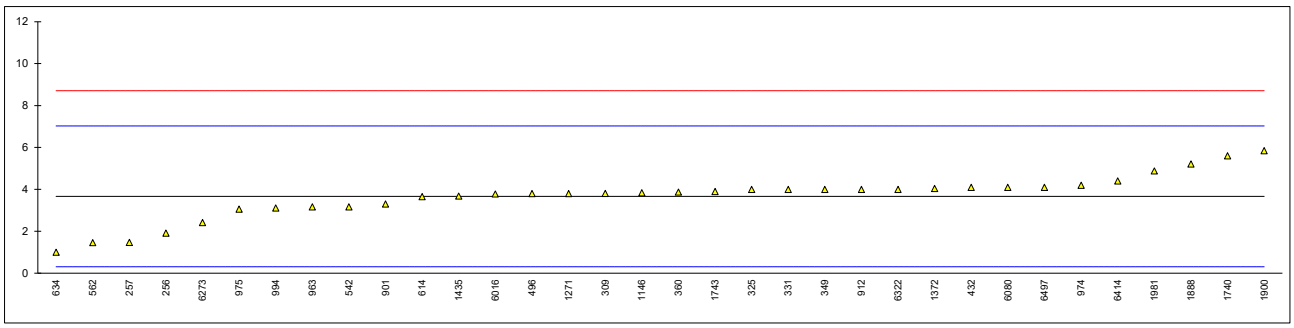
1743
309
325
780
1435
6273
1271
975
432
1854
994
974
1900
257
962
963
381
256
1372
496
542
634
614
1981
6080
1888

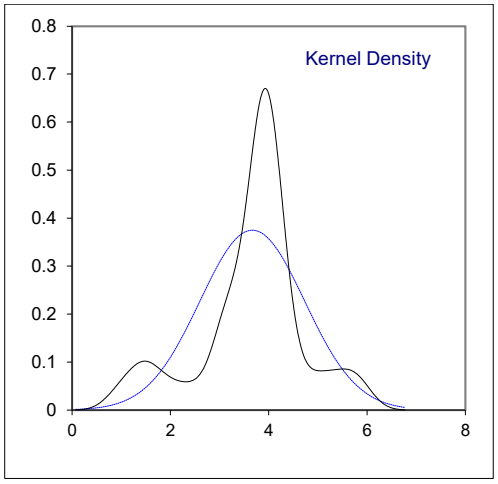

Kernel Density
0.3
0.25
0.2
0.15
0.1
0.05
0
0
5
10
15
20

Determination of Tin as Sn on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		1.91		-1.05	
257	D6595	1.47		-1.31	
309	D5185	3.807		0.08	
325	D5185	4		0.20	
331	D5185	4		0.20	
339	INH-047	<5		-----	
349	D5185	4		0.20	
360	D5185	3.87		0.12	
381		-----		-----	
432	D5185	4.1		0.26	
451		-----		-----	
496	D5185	3.8		0.08	
542	D6595	3.17		-0.30	
562	D6595	1.46		-1.31	
614	D5185	3.65		-0.01	
633		-----		-----	
634	D6595	1.0		-1.59	
780	D5185	< 10		-----	
862		-----		-----	
863		-----		-----	
901	D5185	3.30		-0.22	
912	D5185	4		0.20	
962		-----		-----	
963	D5185	3.17		-0.30	
974	D5185	4.2		0.32	
975	D5185	3.06		-0.36	
994	D5185	3.11		-0.33	
1059	In house	<8		-----	
1146	D5185	3.84		0.10	
1271		3.8		0.08	
1372	D5185	4.04		0.22	
1414		-----		-----	
1435	D5185	3.685		0.01	
1740	D5185	5.6		1.15	
1743	NF T60-106	3.9		0.14	
1854		-----		-----	
1875		-----		-----	
1888	D5185	5.21		0.92	
1900	D5185	5.85	C	1.30	first reported 0
1957	D5185	<1		-----	
1981	D5185	4.88		0.72	
6016	D5185	3.778		0.07	
6080	D5185	4.1		0.26	
6273	D5185	2.42		-0.74	
6322	DIN51418	4		0.20	
6402		-----		-----	
6414	D5185	4.4		0.44	
6497	DIN51399-2Mod.	4.1		0.26	

normality	suspect
n	34
outliers	0
mean (n)	3.667
st.dev. (n)	1.0644
R(calc.)	2.980
st.dev.(D5185:18)	1.6786
R(D5185:18)	4.700

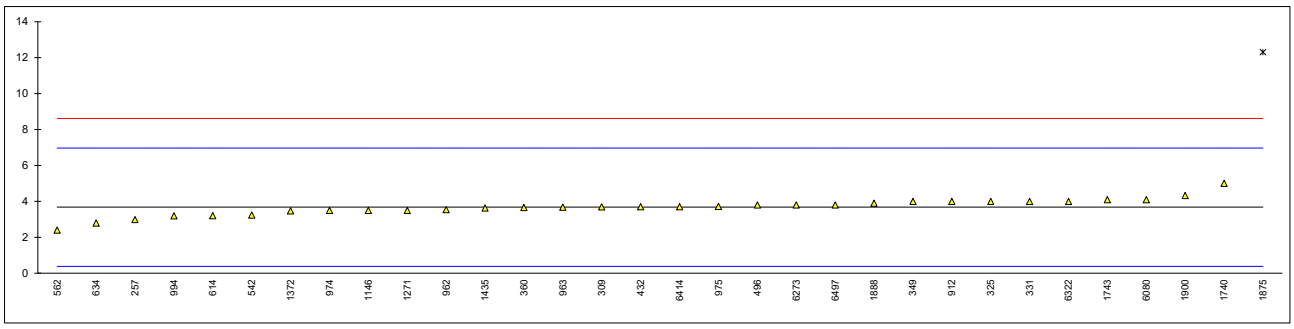

12
10
8
6
4
2
0
634
562
257
266
6273
975
994
963
542
901
614
1435
6016
496
1271
309
1146
360
1743
325
331
349
912
6322
1372
432
6080
6497
974
6414
1981
1888
1740
1900

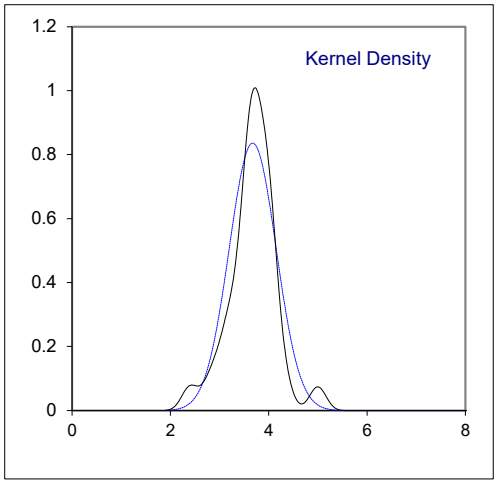

Kernel Density
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8

Determination of Titanium as Ti on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	2.99	C	-0.42	first reported 0.89
309	D5185	3.695		0.01	
325	D5185	4		0.20	
331	D5185	4		0.20	
339	INH-047	<5		-----	
349	D5185	4		0.20	
360	D5185	3.66		-0.01	
381		-----		-----	
432	D5185	3.7		0.01	
451		-----		-----	
496	D5185	3.8		0.08	
542	D6595	3.24		-0.26	
562	D6595	2.40		-0.77	
614	D5185	3.2		-0.29	
633		-----		-----	
634	D6595	2.8		-0.53	
780	D5185	< 5.0		-----	
862		-----		-----	
863		-----		-----	
901	D5185	<5		-----	
912	D5185	4		0.20	
962	D5185	3.54		-0.08	
963	D5185	3.68		0.00	
974	D5185	3.5		-0.11	
975	D5185	3.72		0.03	
994	D5185	3.19		-0.30	
1059		-----		-----	
1146	D5185	3.5		-0.11	
1271		3.5		-0.11	
1372	D5185	3.47		-0.12	
1414		-----		-----	
1435	D5185	3.630		-0.03	
1740	D5185	5		0.80	
1743	NF T60-106	4.1		0.26	
1854		-----		-----	
1875		12.3	R(0.01)	5.24	
1888	D5185	3.90		0.14	
1900	D5185	4.33	C	0.40	first reported 0.43
1957		-----		-----	
1981		-----		-----	
6016		-----		-----	
6080	D5185	4.1		0.26	
6273	D5185	3.8	C	0.08	first reported 1.19
6322	DIN51418	4		0.20	
6402		-----		-----	
6414	D5185	3.7		0.01	
6497	DIN51399-2Mod.	3.8		0.08	

normality	not OK
n	31
outliers	1
mean (n)	3.676
st.dev. (n)	0.4775
R(calc.)	1.337
st.dev.(D5185:18)	1.6462
R(D5185:18)	4.609

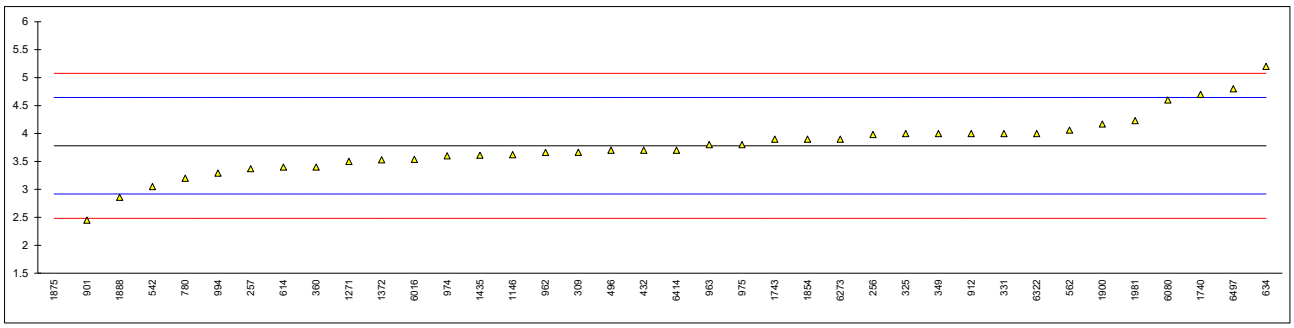

14
12
10
8
6
4
2
0
562
634
257
994
614
542
1372
974
1146
1271
962
1435
360
963
309
432
6414
975
496
6273
6497
1888
349
912
325
331
6322
1743
6080
1900
1740
1875

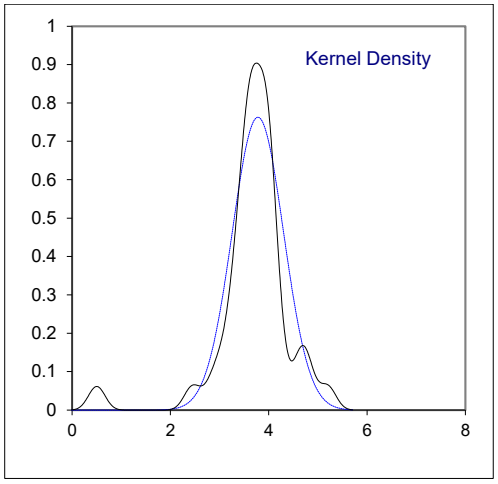

Kernel Density
1.2
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8

Determination of Vanadium as V on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		3.98		0.46	
257	D6595	3.37	C	-0.95	first reported 5.36
309	D5185	3.663		-0.27	
325	D5185	4		0.51	
331	D5185	4		0.51	
339	INH-047	<5		-----	
349	D5185	4		0.51	
360	D5185	3.40		-0.88	
381		-----		-----	
432	D5185	3.7		-0.19	
451		-----		-----	
496	D5185	3.70		-0.19	
542	D6595	3.05		-1.69	
562	D6595	4.06		0.65	
614	D5185	3.4		-0.88	
633		-----		-----	
634	D6595	5.2	C	3.29	first reported 5.8
780	D5185	3.2		-1.34	
862		-----		-----	
863		-----		-----	
901	D5185	2.45		-3.08	
912	D5185	4		0.51	
962	D5185	3.66		-0.28	
963	D5185	3.8		0.04	
974	D5185	3.6		-0.42	
975	D5185	3.80		0.04	
994	D5185	3.29		-1.14	
1059		-----		-----	
1146	D5185	3.62		-0.37	
1271		3.5		-0.65	
1372	D5185	3.53		-0.58	
1414		-----		-----	
1435	D5185	3.612		-0.39	
1740	D5185	4.7		2.13	
1743	NF T60-106	3.9		0.28	
1854	D5185	3.9		0.28	
1875		0.5	R(0.01)	-7.60	
1888	D5185	2.86		-2.13	
1900	D5185	4.17	C	0.90	first reported 0.003
1957	D5185	<1		<-6.44	possibly a false negative test result
1981	D5185	4.23		1.04	
6016	D5185	3.536		-0.57	
6080	D5185	4.6		1.90	
6273	D5185	3.9	C	0.28	first reported 0.69
6322	DIN51418	4		0.51	
6402		-----		-----	
6414	D5185	3.7		-0.19	
6497	DIN51399-2Mod.	4.8		2.36	

normality	suspect
n	37
outliers	1
mean (n)	3.781
st.dev. (n)	0.5231
R(calc.)	1.465
st.dev.(D5185:18)	0.4318
R(D5185:18)	1.209

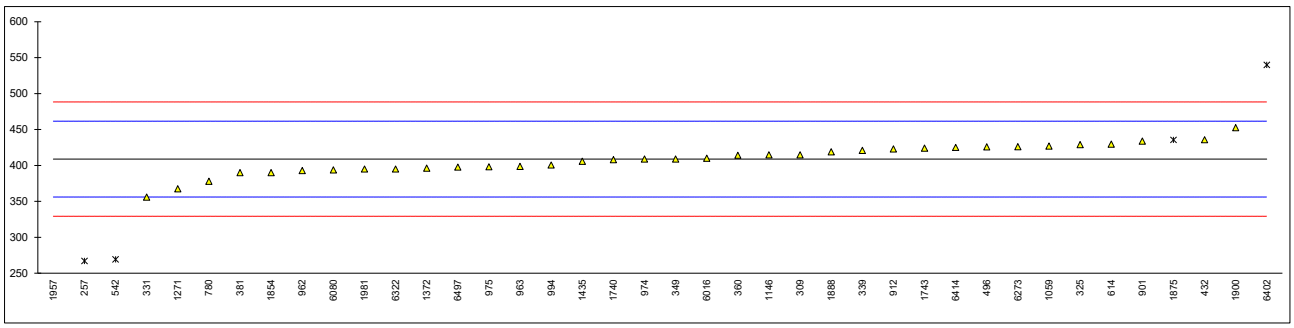

6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1875
901
1888
542
780
994
257
614
360
1271
1372
6016
974
1435
1146
962
309
496
432
6414
963
975
1743
1854
6273
256
325
349
912
331
6322
562
1900
1981
6080
1740
6497
634

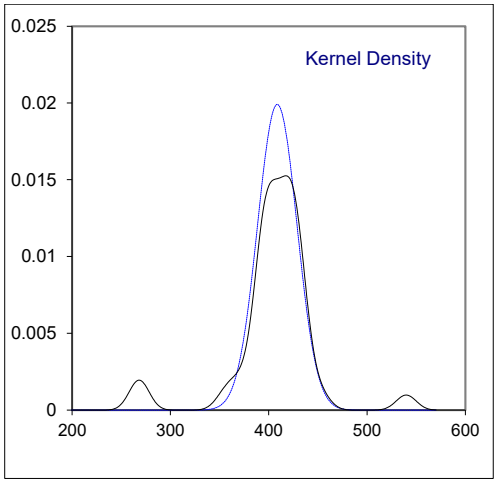

Kernel Density
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8

Determination of Calcium as Ca on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257	D6595	267	C,R(0.01)	-5.36	first reported 252
309	D5185	414.868		0.23	
325	D5185	429		0.76	
331	D5185	356		-1.99	
339	INH-047	421		0.46	
349	D5185	409		0.01	
360	D5185	414.2		0.21	
381	D5185	390.0		-0.71	
432	D5185	435.7		1.02	
451		-----		-----	
496	D5185	425.8		0.64	
542	D6595	269.35	R(0.01)	-5.27	
562		-----		-----	
614	D5185	429.7		0.79	
633		-----		-----	
634		-----		-----	
780	D5185	378		-1.16	
862		-----		-----	
863		-----		-----	
901	D5185	434		0.95	
912	D5185	423		0.54	
962	D5185	393		-0.60	
963	D5185	398.76		-0.38	
974	D5185	409		0.01	
975	D5185	398.10		-0.40	
994	D5185	400.6		-0.31	
1059	In house	427		0.69	
1146	D5185	414.8		0.23	
1271		367.5		-1.56	
1372	D5185	396.28		-0.47	
1414		-----		-----	
1435	D5185	405.766		-0.11	
1740	D5185	408		-0.03	
1743	NF T60-106	424		0.58	
1854	D5185	390		-0.71	
1875		435.5	ex	1.01	excluded as many statistical outliers in related metal analyzes
1888	D5185	418.8		0.38	
1900	D5185	452.67	C	1.66	first reported 14.973
1957	D5185	17.707	C,R(0.01)	-14.78	first reported 18.278
1981	D5185	395		-0.52	
6016	D5185	410.0		0.05	
6080	D5185	393.7		-0.57	
6273	D5185	426		0.65	
6322	DIN51418	395		-0.52	
6402	D5863	539.965	C,R(0.01)	4.96	first reported 540.45
6414	D5185	425		0.61	
6497	DIN51399-2Mod.	397.7		-0.42	

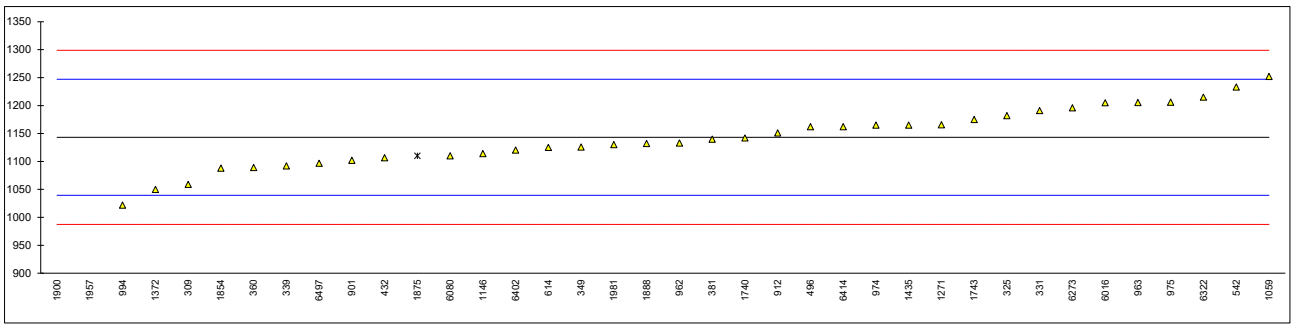
normality	OK
n	35
outliers	4 + 1ex
mean (n)	408.770
st.dev. (n)	20.0525
R(calc.)	56.147
st.dev.(Horwitz)	26.4565
R(Horwitz)	74.078
compare	
R(D5185:18)	37.240


600
550
500
450
400
350
300
250
1957
257
542
331
1271
780
381
1854
962
6080
1981
6322
1372
6497
975
963
994
1435
1740
974
349
6016
360
1146
309
1888
339
912
1743
6414
496
6273
1059
325
614
901
1875
432
1900
6402


Kernel Density
0.025
0.02
0.015
0.01
0.005
0
200
300
400
500
600

Determination of Phosphorus as P on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		-----		-----	
257		-----		-----	
309	D5185	1058.917		-1.62	
325	D5185	1182		0.75	
331	D5185	1191		0.92	
339	INH-047	1092		-0.98	
349	D5185	1126		-0.33	
360	D5185	1089		-1.04	
381	D5185	1140		-0.06	
432	D5185	1106.5		-0.71	
451		-----		-----	
496	D5185	1162		0.36	
542	D6595	1233.4		1.74	
562		-----		-----	
614	D5185	1125		-0.35	
633		-----		-----	
634		-----		-----	
780	D5185	> 1000		-----	
862		-----		-----	
863		-----		-----	
901	D5185	1102		-0.79	
912	D5185	1151		0.15	
962	D5185	1133		-0.20	
963	D5185	1205.4		1.20	
974	D5185	1165		0.42	
975	D5185	1206.1		1.21	
994	D5185	1022		-2.33	
1059	In house	1252		2.10	
1146	D5185	1114		-0.56	
1271		1165.6		0.43	
1372	D5185	1050		-1.79	
1414		-----		-----	
1435	D5185	1165.143		0.42	
1740	D5185	1142		-0.02	
1743	NF T60-106	1175		0.61	
1854	D5185	1088		-1.06	
1875		1110	ex	-0.64	excluded as many statistical outliers in related metal analyzes
1888	D5185	1132.34		-0.21	
1900	D5185	115.70	C,R(0.01)	-19.79	first reported 381.819
1957	D5185	450.043	C,R(0.01)	-13.35	first reported 443.997
1981	D5185	1130		-0.25	
6016	D5185	1205		1.19	
6080	D5185	1110		-0.64	
6273	D5185	1196		1.02	
6322	DIN51418	1215		1.38	
6402	D5863	1120.3		-0.44	
6414	D5185	1162		0.36	
6497	DIN51399-2Mod.	1096.8		-0.89	
	normality	OK			
	n	35			
	outliers	2 + 1ex			
	mean (n)	1143.128			
	st.dev. (n)	52.6882			
	R(calc.)	147.527			
	st.dev.(D5185:18)	51.9228			
	R(D5185:18)	145.384			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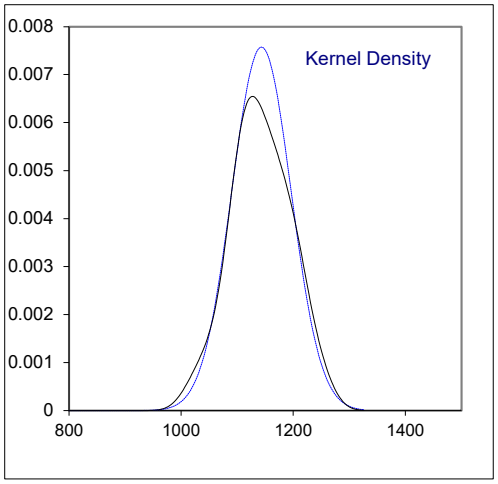
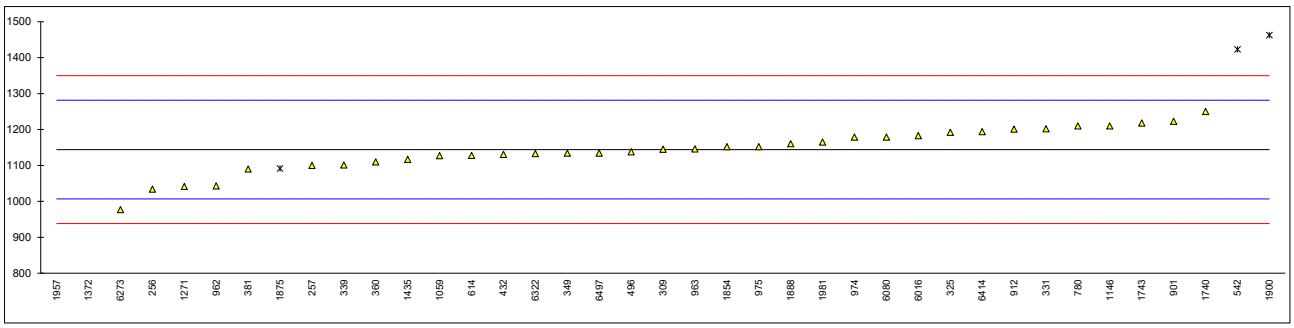
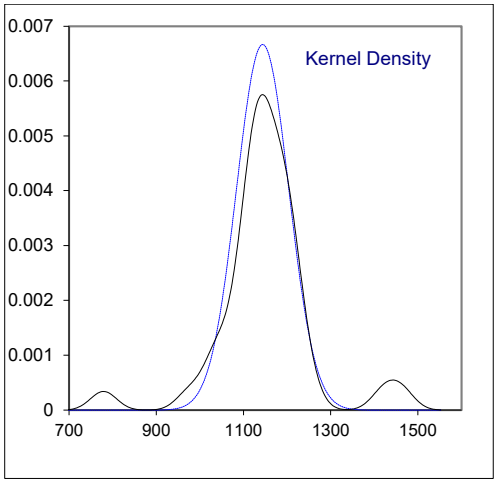
1300
1250
1200
1150
1100
1050
1000
950
900
1900
1957
994
1372
309
1854
360
339
6497
901
432
1875
6080
1146
6402
614
349
1981
1888
962
361
1740
912
496
6414
974
1435
1271
1743
325
331
6273
6016
963
975
6322
542
1059


Kernel Density
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
800
1000
1200
1400

Determination of Zinc as Zn on sample #22212; results in mg/kg

lab	method	value	mark	z(targ)	remarks
178		-----		-----	
179		-----		-----	
237		-----		-----	
256		1034		-1.61	
257	D6595	1100		-0.64	
309	D5185	1145.2		0.02	
325	D5185	1192		0.70	
331	D5185	1202		0.84	
339	INH-047	1101		-0.63	
349	D5185	1134		-0.15	
360	D5185	1110		-0.50	
381	D5185	1090		-0.79	
432	D5185	1130.7		-0.20	
451		-----		-----	
496	D5185	1138		-0.09	
542	D6595	1423	R(0.01)	4.07	
562		-----		-----	
614	D5185	1128		-0.24	
633		-----		-----	
634		-----		-----	
780	D5185	1210		0.96	
862		-----		-----	
863		-----		-----	
901	D5185	1223		1.15	
912	D5185	1201		0.83	
962	D5185	1043		-1.47	
963	D5185	1146.19		0.03	
974	D5185	1179		0.51	
975	D5185	1152.2		0.12	
994		-----		-----	
1059	In house	1127		-0.25	
1146	D5185	1210		0.96	
1271		1041.7		-1.49	
1372	D5185	779.18	R(0.01)	-5.32	
1414		-----		-----	
1435	D5185	1116.770		-0.40	
1740	D5185	1250		1.54	
1743	NF T60-106	1218		1.08	
1854	D5185	1152		0.11	
1875		1091.7	ex	-0.76	excluded as many statistical outliers in related metal analyzes
1888	D5185	1160.49		0.24	
1900	D5185	1462.50	C,R(0.01)	4.64	first reported 546.901
1957	D5185	396.664	C,R(0.01)	-10.90	first reported 405.446
1981	D5185	1165		0.30	
6016	D5185	1183		0.57	
6080	D5185	1179		0.51	
6273	D5185	977		-2.44	
6322	DIN51418	1133		-0.16	
6402		-----		-----	
6414	D5185	1194		0.73	
6497	DIN51399-2Mod.	1134.7		-0.14	
	normality	OK			
	n	34			
	outliers	4 + 1ex			
	mean (n)	1144.146			
	st.dev. (n)	59.8538			
	R(calc.)	167.591			
	st.dev.(D5185:18)	68.5882			
	R(D5185:18)	192.047			


1500
1400
1300
1200
1100
1000
900
800
1957
1372
6273
256
1271
962
381
1875
257
339
360
1435
1059
614
432
6322
349
6497
496
309
963
1854
975
1888
1981
974
6080
6016
325
6414
912
331
780
1146
1743
901
1740
542
1900


Kernel Density
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
700
900
1100
1300
1500

APPENDIX 2

Number of participants per country

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 BOTSWANA
1 lab in BULGARIA
1 lab in CHILE
2 labs in CHINA, People's Republic
1 lab in COTE D'IVOIRE
1 lab in CROATIA
1 lab in EGYPT
1 lab in FINLAND
4 labs in FRANCE
4 labs in GERMANY
3 labs in GREECE
1 lab in INDIA
1 lab in IRAN, Islamic Republic of
1 lab in IRELAND
1 lab in KAZAKHSTAN
1 lab in MOROCCO
3 labs in NETHERLANDS
1 lab in NIGERIA
3 labs in NORWAY
2 labs in PHILIPPINES
2 labs in POLAND
1 lab in PORTUGAL
1 lab in QATAR
1 lab in RUSSIAN FEDERATION
4 labs in SAUDI ARABIA
1 lab in SERBIA
1 lab in SLOVAKIA
1 lab in SLOVENIA
1 lab in SPAIN
1 lab in SWEDEN
2 labs in TANZANIA
2 labs in TURKEY
2 labs 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 = calculation difference between reported test result and result calculated by iis
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
f+? = possibly a false positive test result?
f-? = possibly a false negative test result?
SDS = Safety Data Sheet

Literature

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