Results of Proficiency Test
Migration of elements EN71-3
April 2018

Organised by: Institute for Interlaboratory Studies (iis)
Spijkenisse, the Netherlands

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CONTENTS

1 INTRODUCTION

Toy safety is the practice of ensuring that toys, especially those made for children, are safe, usually through the application of set safety standards. In many countries, toys must be able to pass safety tests in order to be sold. Many regions model their safety standards on the EU's EN71 standard, either directly, or through adoption of the ISO8124-3 standard which in itself is modelled on EN71. In Europe, toys must meet the criteria set by the EC Toy Safety Directive (Council Directive 88/378/EEC). This directive has been superseded by Council Directive 2009/48/EC, which applies to toy imports into the EU since 20 July 2011. There is an exception for the chemical requirements under part III of Annex II of this directive. These chemical requirements became into force on 20 July 2013.
The test methods EN71-3:2013 and ISO 8124-3:2010 (which corresponds with EN71-3:1994, included the analytical correction) both describe the determination of migration of elements (metals that are considered hazardous) when a toy gets into contact with an acid solution (0.07 n HCl, simulating a gastric acid solution).
In this interlaboratory study on migration of certain elements 92 laboratories in 29 different countries registered for participation. See appendix 3 for the number of participants per country.
In this report, the results of the 2018 proficiency test are presented and discussed. This report is also electronically available through the iis website www.iisnl.com.

2 SET UP

The Institute for Interlaboratory Studies (iis) in Spijkenisse, the Netherlands, was the organiser of this proficiency test (PT). Sample analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. It was decided to send three different samples with different concentrations of various elements for evaluation in the PT. The first sample (labelled #18540) was a plaster enriched with Zinc, Manganese and Antimony salts. The second sample (labelled #18541) was a paper sample printed with ink which was fortified with Barium and Cadmium salts. The third sample (labelled #18542) was a dried paint fortified with Cobalt, Manganese and Strontium salts. The three materials contained a combination of elements mentioned in the ‘new’ Council Directive 2009/48/EC under categories 1 and 3.
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/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant’s data. Feedback from the participants on the reported data is encouraged and customer’s satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organization, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4). 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

Three batches of samples with different matrices and containing each a number of different elements were prepared. One batch was a plaster (= cat. 1), the second batch was a paper sample with printing ink (=cat. 3) and the third batch was a scraped-off dried paint (=cat. 3), all batches were prepared by iis.

To the batch of plaster (used for sample #18540) the elements Antimony, Manganese and Zinc were added via several intermediate steps. After thorough mixing/homogenizing, the batch of plaster was divided over 120 plastic bags, each filled with 0.5 grams and labelled #18540. The homogeneity of the subsamples was verified by measuring the element content by digestion on 8 stratified randomly selected samples. The results varied for Antimony between 641 - 680 mg/kg, for Manganese between 914 - 935 mg/kg and for Zinc between 537 – 576 mg/kg. The differences between the test results for homogeneity of the subsamples #18540 were all well within the precision of the laboratory and therefore the homogeneity of the subsamples #18540 was assumed.

A batch of paper was printed both sides with ink, that was enriched with the elements Barium and Cadmium. After thorough mixing/homogenizing of the ink, it was used to print 30 sheets of paper. After drying, the sheets of paper were cut into pieces (approximately 1 gram each). 120 plastic bags were filled with two pieces of paper and labelled #18541. The homogeneity of the subsamples was verified by measuring Barium and Cadmium after migration according to EN71-3 on 8 stratified randomly selected samples. The migration test results varied for Barium between 55.10 – 59.22 mg/kg and for Cadmium between 26.46 – 29.47 mg/kg. The differences between the test results for homogeneity of the subsamples #18541 were well within the precision of the laboratory and therefore the homogeneity of the subsamples #18541 was assumed.

A batch of liquid paint (used for sample #18542) was enriched with the elements Cobalt, Manganese and Strontium. After application to a surface, drying, scraping off, milling, sieving and homogenization, a total of 120 samples of 0.5 gram were prepared and labelled #18542. The homogeneity of the subsamples #18542 was verified by measuring the element content by

digestion on 8 stratified randomly selected samples. The results varied for Cobalt between 177.9 – 188.9 mg/kg, for Manganese between 173.2 – 181.3 mg/kg and for Strontium 1008 – 1039 mg/kg. The differences between the test results for homogeneity of the subsamples #18542 were all well within the precision of the laboratory and therefore the homogeneity of the subsamples #18542 was assumed.

One plastic bag with 0.5 gram of plaster (#18540), one plastic bag with 2 pieces of 1.0 gram of printed paper (#18541) and one plastic bag with 0.5 gram of scraped-off dried paint (#18542) were sent to the participating laboratories on March 21, 2018.

2.5 ANALYSES

The participants were requested to determine the migration of elements applying the analysis procedure that is routinely used in the laboratory. Also, some analytical method details were requested to be reported for sample #18542 (Dried Paint) only.

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 to 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 evaluation.

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 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-cts/. The participating laboratories are also requested to confirm the samples 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-cts/. The reported test results are tabulated per determination in appendix 1 of this report. The laboratories are presented by their code numbers.
Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalysis). Additional or corrected test results are used for data analysis and the original reported test results 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 organisation of this proficiency test was the one as described in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of March 2017 (iis-protocol, version 3.4)
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.

In accordance to ISO 5725 the original test results per determination were submitted subsequently to Dixon's and Grubbs' and/or Rosner's outlier tests. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of the averages and the standard deviations.

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

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported analysis results are plotted. The corresponding laboratory numbers are 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. The Kernel Density Graph is a method for producing a smooth density approximation to a set of data that avoids some problems

associated with histograms. Also, a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

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

The target standard deviation was calculated from the target reproducibility by division with 2.8. In case no literature reproducibility was available, other target values were used. In some cases, a reproducibility based on former iis proficiency tests could be used.

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

The z-scores were calculated in accordance with:

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

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

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

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

4 EVALUATION

During the execution of this proficiency test no problems were encountered. Three participants reported test results after the deadline for reporting and one participant did not report any test results at all. Not all laboratories were able to report all elements requested. Finally, the 91 reporting laboratories submitted 1110 numerical test results. Observed were 7 outlying results, which is 0.6%. In proficiency studies outlier percentages of 3% - 7.5% are quite normal.

For the determination of Metals migrated from different matrices EN71-3 method is considered to be the official test method. In the 2013 version of this test method Annex B.3 a statement with regards to the precision values was given.

Quote"
The results on the different method part and on the 3 toy categories showed wide spread. Depending on the element/toy material category the statistical evaluation of this data lead to satisfying and unsatisfying estimations of the measurement uncertainty depending of the use of different statistical methods. These findings had been assessed by the CEN/TC 52/WG 5 "Safety of toys – Chemical properties" as not sufficient for taking the repeatability and reproducibility data on board of this standard. The evaluation of the causes for this is still ongoing.
"Unquote

Regretfully, no other precision data are available. Therefore, iis decided to use the precision data from CEN/TC 52/WG 5 (No.426) to evaluate the performance of the group of participants. In 2018 a revised report was published on statistical evaluation for test method 71-3 (CEN/TC 52/WG 5 (No.431). In this report, new precision data are mentioned. Regretfully, not for all elements in the three classes precision data are present. Also, large differences between several precision data for several elements are visible. Therefore, iis decided to mention the precision data of the revised report (CEN/TC 52/WG 5) is mentioned for comparison only.

Not all original data sets proved to have a normal Gaussian distribution. These are referred to as "not OK" or "suspect". The statistical evaluation of these data sets should be used with due care, see also paragraph 3.1.

4.1 EVALUATION PER SAMPLE AND PER ELEMENT

In this section, the determination is discussed per sample and per element. All statistical results reported on the samples are summarised in appendix 1.

The participants were requested to report 17 different metals in all three samples. The majority of participants did detect for sample #18540: Aluminium, Cadmium, Lead, Manganese, Strontium and Zinc, for sample #18541: Aluminium, Barium, Cadmium, Manganese and Strontium and for sample #18542: Aluminium, Cobalt, Manganese and Strontium.
The participants were also requested to report some analytical details of the determination on the dried paint sample #18542.

PLASTER Sample #18540

Aluminium: The determination of the migration of Aluminium was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in good agreement with the target reproducibility based on the data in report "Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.

Cadmium: The determination of the migration of Cadmium at a level of 1.66 mg/kg was not be problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the target reproducibility based on the data in report "Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.

Lead: The determination of the migration of Lead at a level of 3.09 mg/kg may be problematic. Two statistical outliers were observed. The calculated

reproducibility after rejection of the statistical outliers is not in agreement with the target reproducibility based on the data in report “Statistical evaluation of results from the round robin on EN71-3:13”, ref. 16.

Manganese: The determination of the migration of Manganese at a level of 64.7 mg/kg may be problematic. No statistical outliers were observed. However, the calculated reproducibility is not in agreement with the target reproducibility based on the data in report “Statistical evaluation of results from the round robin on EN71-3:13”, ref. 16.

Strontium: The determination of the migration of Strontium at a level of 631 mg/kg was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is good in agreement with the target reproducibility based on the data in report “Statistical evaluation of results from the round robin on EN71-3:13”, ref. 16.

Zinc: The determination of the migration of Zinc was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in good agreement with the target reproducibility based on the data in report “Statistical evaluation of results from the round robin on EN71-3:13”, ref. 16.

PAPER Sample #18541:

Aluminium: No significant conclusions were drawn as the observed migration level for Aluminium from paper sample #18541 is very low compared to the migration limit mentioned in EN71-3:2013, category 3 (63 vs 70000 mg/kg).

Barium: The determination of the migration of Barium was not problematic. No statistical outliers were observed. The calculated reproducibility is in good agreement with the target reproducibility based on the data in report “Statistical evaluation of results from the round robin on EN71-3:13”, ref. 16.

Cadmium: The determination of the migration of Cadmium was not problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is in good agreement with the target reproducibility based on the data in report “Statistical evaluation of results from the round robin on EN71-3:13”, ref. 16.

Manganese: No significant conclusions were drawn as the observed migration level for Manganese is very low compared to the migration limit mentioned in EN71-3:2013, category 3 (7 vs 15000 mg/kg).

Strontium: The determination of the migration of Strontium may be problematic. One statistical outlier was observed. However, the calculated reproducibility after rejection of the statistical outlier is not in agreement with the target reproducibility based on the data in report “Statistical evaluation of results from the round robin on EN71-3:13”, ref. 16.

DRIED PAINT Sample #18542:

For the dried paint sample (#18542) bimodal distributions were found for Aluminium and Strontium. Since the sample was enriched with Cobalt and Manganese, in order to give significant migration levels of these elements, and given the proven fact that the elements were homogeneously divided over the sample material, it was clear that the lower test results were suspect. In order to have a good estimate of the migration level of these elements, only the test results of the laboratories that reported to have added a solution of 2 mol/l hydrochloric acid after one minute of shaking as per EN71-3:2013 or ISO 8124-3 (see appendix 2 and the discussion in chapter 5), were taken into account for the statistical calculations of these elements.

Aluminium: The determination of the migration of Aluminium may not be problematic. No statistical outliers were observed, but eighteen test results were excluded. However, the calculated reproducibility after rejection of the suspect data is in good agreement with the target reproducibility based on the data in report "Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.

Cobalt: The determination of the migration of Cobalt may not be problematic. No statistical outliers were observed, but twenty-six test results were excluded. However, the calculated reproducibility after rejection of the suspect data is in good agreement with the target reproducibility based on the data in report "Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.

Manganese: The determination of the migration of Manganese was not problematic. No statistical outliers were observed, but twenty-seven test results were excluded. However, the calculated reproducibility, after rejection of the suspect data, is in agreement with the target reproducibility based on the data in report "Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.

Strontium: The determination of the migration of Strontium at a level of 800 mg/kg may be problematic. No statistical outliers were observed, but twenty-four test results were excluded. The calculated reproducibility after rejection of the suspect data is not in agreement with the target reproducibility based on the data in report "Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the target reproducibilities based on the report "Statistical evaluation of results from the round robin on EN71-3:13", ref. 16 and the reproducibilities as found for the group of participating laboratories. The number of significant results, the average results, the calculated reproducibilities (standard deviation*2.8) and the target reproducibilities (EN71-3:13) are compared in the next table.

Element	*unit*	*n*	*average*	*2.8 * sd*	*R (target)*
Aluminium	mg/kg	82	291	166	448
Cadmium	mg/kg	63	1.7	0.9	2.1
Lead	mg/kg	57	3.1	2.6	2.3
Manganese	mg/kg	83	64.7	24.8	22.1
Strontium	mg/kg	80	631	258	336
Zinc	mg/kg	79	395	188	354

Table 1: reproducibilities of test results in plaster sample #18540

Element	*unit*	*n*	*average*	*2.8 * sd*	*R (target)*
Aluminium	mg/kg	63	62.8	80.8	(121.4)
Barium	mg/kg	86	49.9	17.7	30.7
Cadmium	mg/kg	85	21.8	12.1	34.1
Manganese	mg/kg	42	7.0	4.6	(4.7)
Strontium	mg/kg	80	106	53	47

Table 2: reproducibility of test results in paper sample #18541

Element	*unit*	*n*	*average*	*2.8 * sd*	*R (target)*
Aluminium	mg/kg	35	68.6	103.0	132.6
Cobalt	mg/kg	60	148	76	232
Manganese	mg/kg	57	132	78	89
Strontium	mg/kg	56	791	446	354

Table 3: reproducibilities of test results in dried paint sample #18542

From the above table it can be concluded that, without statistical calculations, the group of participating laboratories has no difficulties with the determination of the migration of the evaluated elements in plaster and dried paint in accordance with EN71-3:2013 when compared with the target reproducibilities based on the report “Statistical evaluation of results from the round robin on EN71-3:13”, ref. 16.

4.3 COMPARISON OF THE PROFICIENCY TEST OF APRIL 2018 WITH PREVIOUS PTS

The uncertainties determined in this PT are compared with the relative standard deviations as found in previous years and with the target requirements in the next tables:

Element	*April 2018*	*April 2017*	*April 2016*	*April 2015*	*2013-2014*	*Target*) category1*	*Target**) category1*
Aluminium	20%	23%	20%	20%	21%	55%	7.6%
Antimony	--	47%	--	**--**	28%	39%	--
Arsenic	--	--	32%	**--**	**--**	40%	13%
Barium	--	--	--	20%	--	29%	--
Boron	--	--	--	**--**	--	21%	--
Cadmium	18%	--	--	**--**	--	45%	--
Chromium	--	--	44%	**--**	--	23%	7.4%
Cobalt	--	--	--	**--**	--	16%	--
Copper	--	28%	17%	**--**	--	23%	12%
Lead	30%	22%	22%	19%	18%	26%	16%

Element	*April 2018*	*April 2017*	*April 2016*	*April 2015*	*2013-2014*	*Target*) category1*	*Target**) category1*
Manganese	14%	13%	16%	13%	12%	12%	10%
Nickel	--	--	--	15%	--	24%	--
Selenium	--	--	--	25%	--	54%	--
Strontium	15%	21%	18%	18%	--	19%	15%
Tin	--	--	--	**--**	--	37%	--
Organic Tin	--	--	--	**--**	--	39%	--
Zinc	17%	--	--	**--**	--	32%	--

Table 4: comparison of the uncertainties in the previous rounds and this PT for category 1 materials
*) From the report 'Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.
**) From the report 'Statistical evaluation of results from the round robin on EN71-3:18", ref. 18.

Element	*April 2018*	*April 2017*	*April 2016*	*April 2015*	*April 2014*	*2010-2013*	*Target*) cat. 3*	*Target**) cat 3*
Aluminium	46-54%	58-63%	16%	17%	37%	34%	69%	--
Antimony	--	--	28%	--	22%	22-33%	61%	34%
Arsenic	--	--	20%	--	14%	13-16%	45%	--
Barium	13%	--	--	--	--	20–76%	22%	19%
Boron	--	--	--	12%	--	--	14%	--
Cadmium	20%	--	13%	12%	12%	11-14%	56%	12%
Chromium III	--	25%	17%	14%	--	6-23%	29%	18%
Chromium VI	--	--	--	--	--	--	46%	--
Cobalt	--	20%	--	10%	--	18%	56%	11%
Copper	18%	--	--	--	--	11-12%	28%	--
Lead	--	--	22%	12%	--	12-22%	22%	21%
Manganese	21-23%	24-29%	24%	--	13%	15%	24%	--
Mercury	--	--	--	--	--	55%	n.a.	--
Nickel	--	--	--	21%	14%	15-18%	35%	20%
Selenium	--	--	--	--	--	26%	51%	--
Strontium	18-20%	20-25%	13%	--	--	--	16%	11%
Tin	--	--	--	--	--	32-42%	32%	48%
Organic Tin	--	--	--	--	--	--	39%	35%
Zinc	--	--	--	--	13%	11-39%	43%	12%

Table 5: comparison of the uncertainties in the previous rounds and this PT for category 3 materials
*) From the report 'Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.
**) From the report 'Statistical evaluation of results from the round robin on EN71-3:18", ref. 18.

For the investigated elements, the performance of the group is in general equal to, or better in comparison to the performance in previous years and in comparison, with the precision requirements of EN71-3.

4.4 EVALUATION OF ANALYTICAL DETAILS

In this PT, the participants were asked to provide several analytical details and also a question about the accreditation status was requested
Seventy-six of the registered participants mentioned that they are ISO/IEC 17025 accredited for determination Migration of elements (EN71-3). Ten participants mentioned that the laboratory is not accredited for this determination.

All other questions were related to the determination of the category 3 samples.
-the amount of sample used in the determination: the majority of the participants reported an intake between 100 and 200 mg. Nine participants reported to have used larger intakes.
- the amount of HCl solution used for the migration: the majority of the participants reported to have used a volume ratio of 1 mL per 20 mg.
The third, fourth, fifth and sixth question were related to each other and concerned the pH measurement and the addition of HCl. A number of participants measured a pH value below 2 and did not adjust the pH. This may lead to a low recovery of elements (especially for Aluminium). Therefore, only the test results of the participants that did report to have adjusted the pH were used for the statistical calculations.
Almost all participants reported to have shaken for 1 hour and did wait another 1 hour before the start of the analysis.

5 DISCUSSION

In the previous proficiency tests iis16V02 and iis17V02 problems were found with the determination of elements in dried paint. In order to find the cause of the problems, the participants were asked to give some analytical details as used for the determination of elements on the dried paint (sample #18542), e.g. the amount of sample and the volume of the 0.07 mol/l HCl and the pH adjustment, see appendix 2.
It appeared that not all participating laboratories followed EN 71-3 or ISO 8124-3 to the letter.

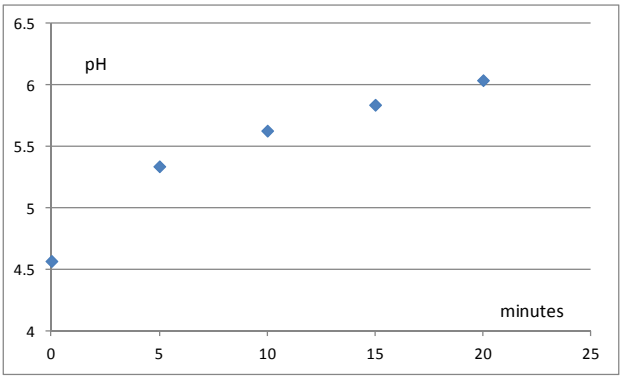
Ratio dried paint: solution 0.07 mol/l HCl
This ratio varied from 2 up to 79 (lab 3150: 10mg/5ml and lab 2433: 102.7mg/1.3ml);
Only 79% of the laboratories reported to have used a ratio of 20:1 as mentioned in EN 71-3 and ISO 8124-3, and 6 laboratories reported to have used a clearly deviating ratio.
The influence of the deviating ratios on the element concentrations was small for the dried paint sample evaluated in this PT. Therefore, the use of a deviating ratio was not used for exclusion from the statistical calculations for sample #18542.

pH adjustment
Of all reporting laboratories, 61 laboratories did adjust the pH after one minute shaking at 37°C, while 18 laboratories did not do this. The influence of the adjustment of the pH on the element concentrations may be significant. See also the previous report of the migration of elements EN71-3 (iis16V02 and iis17V02)), in which this was investigated and explained.

-- from report iis16V02—

Quote"

To investigate the fact that very different initial pH values were reported, a small experiment was done. An amount of 250 mg dried paint sample #16557 was added to 12.5 ml 0.07 mol/l HCl at room temperature (approx. 25°C). The blank pH was 1.25. After addition of the dried paint the mixture was not shaken, nor heated. The pH, immediately after addition of the dried paint was 4.57. It was measured again after 5 min., 10 min., 15 min. and 20 min., see graph:



After 20 min. the temperature was raised to 37°C. The final pH after 60 min. was 6.42 (!). No Aluminium could be detected in this final solution with pH 6.42 after filtering through 0.45µm. The migration of elements of sample #16557 obviously consumes a significant amount of acid. Therefore, it is clear that pH adjustment was necessary. However, many laboratories did not adjust the pH at all and several other laboratories did measure the pH at t = 0 min. and thus they may have added too little acid. In both cases the necessary excess of acid may not have been used. This will have caused Aluminium to precipitate when pH>5. Other metals may have co-precipitated and the precipitate will have been removed during the filtering step.
This may well explain the very low test results for Aluminium, Cadmium, Chromium, Lead and Strontium as reported by a number of laboratories.
"Unquote

It was therefore decided that only the test results of the laboratories that explicitly reported to have adjusted the pH after one minute were used for the statistical calculations for sample #18542. It was not investigated why other laboratories did measure a pH<1.5 after one minute of shaking and therefore incorrectly did not add HCl to adjust the pH. It may be an erratic pH measurement or may be that the shaking was omitted.

The reported test results will in practice for the EU be compared to the requirements for toys according to EN71-3:2013 (category I for plaster sample #18540 and category III for paper sample #18541 and for dried paint sample #18542), which supports essential requirements of EU Directive 2009/48/EC, see table 6. When this is done with the test results as reported in this proficiency test, the following is observed.

Plaster sample #18540 would be rejected by 54 laboratories that reported a test result for Cadmium >1.3 mg/kg. Furthermore, plaster sample #18540 would also be rejected by one laboratory for Lead (lab 2685 reported 15.20 mg/kg). For all other elements, the laboratories would accept the plaster sample #18540 as the reported test results are below the maximum migration limits.

Paper sample #18541 would be rejected by 73 laboratories only for Cadmium. The 73 laboratories reported a test result for Cadmium >17 mg/kg. All other laboratories would accept the sample for Cadmium.

Dried paint sample #18542 would be rejected by 62 laboratories for a Cobalt concentration above the maximum migration limit of 130 mg/kg. The sample would be accepted by 24 other laboratories. Sample #18542 would be accepted by all laboratories for Aluminium, Manganese and Strontium.

The maximum migration limits are given in table 6.

Element	EN71-3:2013, Category 1: Migration limits for dry, brittle, powder like materials in mg/kg	EN71-3:2013, Category 3: Migration limits for scraped off materials in mg/kg	ISO8124-3: Migration limits in mg/kg
Aluminium	5625	70000	-
Antimony	45	560	60
Arsenic	3.8	47	25
Barium	1500	18750	1000
Boron	1200	15000	-
Cadmium	1.3	17	75
Chromium III	37.5	460	60
Chromium VI	0.02	0.2	-
Cobalt	10.5	130	-
Copper	622.5	7700	-
Lead	13.5	160	90
Manganese	1200	15000	-
Mercury	7.5	94	60
Nickel	75	930	-
Selenium	37.5	460	500
Strontium	4500	56000	-
Tin	15000	180000	-
Organic Tin	0.9	12	-
Zinc	3750	46000	-

Table 6: maximum migration limits according EN71-3:2013 (and 2009/48/EN) and ISO8124-3:2010

6 CONCLUSION

Each participating laboratory should evaluate its performance in this study and decide about any corrective actions if necessary.
Therefore, participation on a regular basis in this scheme could be helpful to improve the performance and thus increase of the quality of the analytical results.

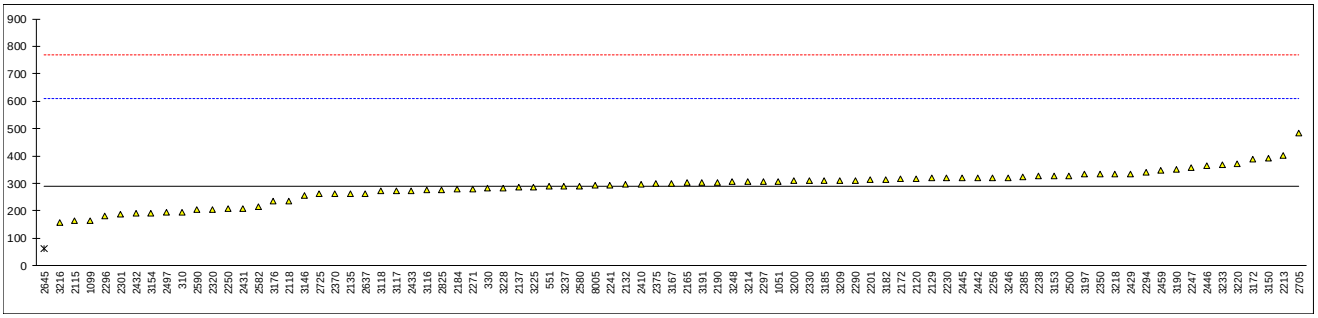
~~A~~PPENDIX 1

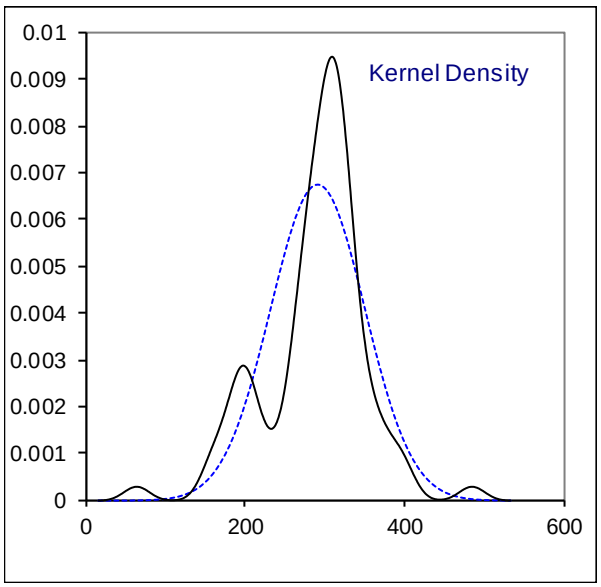
Determination of migration of Aluminium as Al on plaster/chalk sample #18540; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	195.9		-0.59	
330	EN71-3	281.98		-0.05	
551	EN71-3	289.9		-0.01	
1051	EN71-3	308.182		0.11	
1099	EN71-3	164.69		-0.79	
2115	EN71-3	162.8	C	-0.80	First reported 116.6
2118	EN71-3	236.39		-0.34	
2120	EN71-3	318.0		0.17	
2129		319		0.18	
2132	EN71-3	295.88		0.03	
2135		263.40		-0.17	
2137	EN71-3	286		-0.03	
2165	EN71-3	301.8		0.07	
2172	EN71-3	317.5		0.17	
2184	EN71-3	278.2		-0.08	
2190	EN71-3	304.4		0.09	
2201	EN71-3	313.3		0.14	
2213	EN71-3	401.3		0.69	
2230	EN71-3	321		0.19	
2238	EN71-3	327.46		0.23	
2241	EN71-3	293.743		0.02	
2247	EN71-3	359.1		0.43	
2250	EN71-3	207.4087		-0.52	
2256	EN71-3	321.2		0.19	
2271	EN71-3	279		-0.07	
2290	EN71-3	310.9		0.13	
2293		-----		-----	
2294	EN71-3	340.891		0.31	
2296	In house	181.7796		-0.68	
2297	EN71-3	308.1		0.11	
2301	EN71-3	188.8000		-0.64	
2320	EN71-3	204	C	-0.54	First reported 98.2
2330	EN71-3	309.81	C	0.12	First reported 473.6328
2350	EN71-3	333.9		0.27	
2370	EN71-3	263		-0.17	
2375	EN71-3	299		0.05	
2385	EN71-3	322		0.20	
2410	EN71-3	298		0.05	
2429	EN71-3	335.44		0.28	
2431	EN71-3	208.7356	C	-0.51	First reported 407.5837
2432	EN71-3	189.5150		-0.63	
2433	EN71-3	273.91		-0.11	
2442	EN71-3	321.04		0.19	
2445	EN71-3	321		0.19	
2446	EN71-3	363.109142	C	0.45	First reported 363109.142
2459	EN71-3	347.175		0.35	
2475		-----		-----	
2495		-----		-----	
2497		192.81		-0.61	
2500	EN71-3	328.234		0.23	
2509		-----		-----	
2580	EN71-3	291		0.00	
2582	EN71-3	215.51		-0.47	
2590	EN71-3	203.6258		-0.54	
2637	EN71-3	264		-0.17	
2642		-----		-----	
2645	EN71-3	63.53	C,R(0.05)	-1.42	First reported 170.54
2674		-----		-----	
2685		-----		-----	
2705	EN71-3	484.5	C	1.21	First reported 98.2
2725	EN71-3	260.9132		-0.19	
2728		-----		-----	
2819		-----		-----	
2825	EN71-3	275.2		-0.10	
3116	EN71-3	274.58		-0.10	
3117	EN71-3	272.015		-0.12	
3118	EN71-3	271.489		-0.12	
3146	EN71-3	254		-0.23	
3150	EN71-3	393		0.64	
3153	EN71-3	328.2		0.23	
3154	EN71-3	192.6		-0.61	
3167	EN71-3	300.5		0.06	
3172	EN71-3	389.9		0.62	
3176	EN71-3	234.90		-0.35	
3182	EN71-3	315.1663		0.15	
3185	EN71-3	310.52		0.12	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	349.7		0.37	
3191	EN71-3	303.3998		0.08	
3197	EN71-3	333.4		0.27	
3200	EN71-3	308.82		0.11	
3209	EN71-3	310.53		0.12	
3214	EN71-3	307.9		0.11	
3216	EN71-3	155.431		-0.85	
3218	EN71-3	334		0.27	
3220	EN71-3	371.6845	C	0.51	First reported 74.3369
3225	EN71-3	287.04		-0.02	
3228	EN71-3	282.3		-0.05	
3233	EN71-3	367.7671	C	0.48	First reported 427.8742
3237	EN71-3	290.80		0.00	
3246	EN71-3	321.291		0.19	
3248		305		0.09	
8005		293.26		0.02	

	normality	OK
	n	82
	outliers	1
	mean (n)	290.76
	st.dev. (n)	59.240
	R(calc.)	165.87
	st.dev.(RR prEN71-3:13)	159.920
	R(RR prEN71-3:13)	447.78
Compare		
	R(RR prEN71-3:18)	61.87



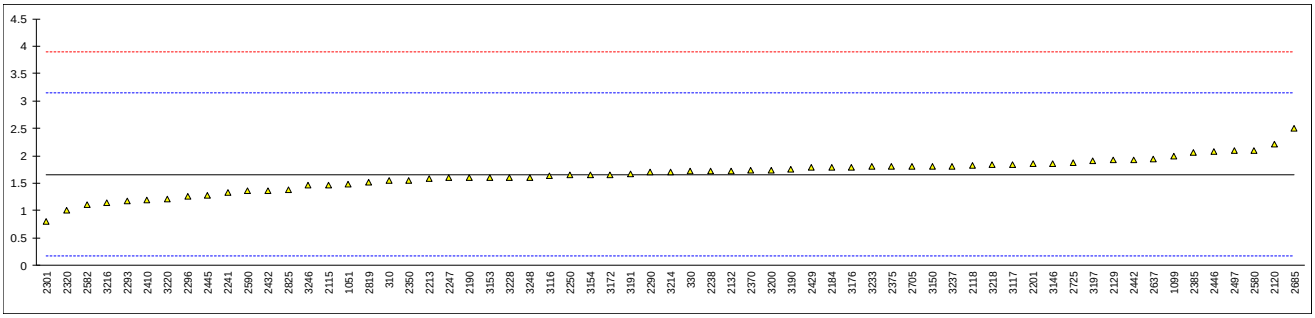


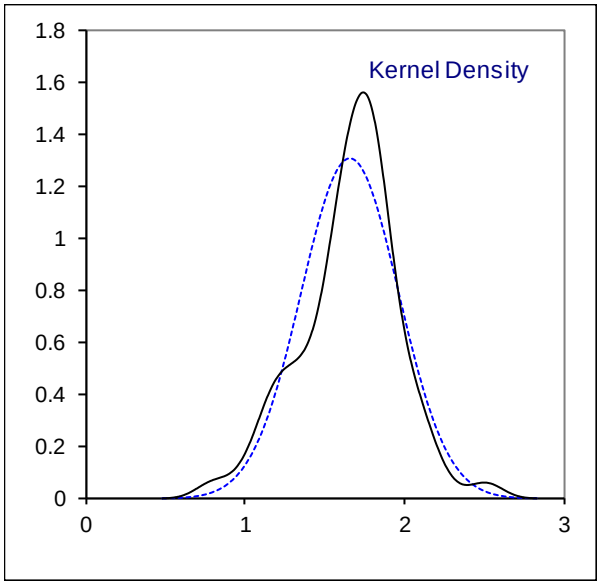
Determination of migration of Cadmium as Cd on plaster/chalk sample #18540; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	1.558		-0.13	
330	EN71-3	1.72		0.08	
551	EN71-3	ND		-----	
1051	EN71-3	1.478		-0.24	
1099	EN71-3	1.99		0.44	
2115	EN71-3	1.47		-0.25	
2118	EN71-3	1.815		0.21	
2120	EN71-3	2.22		0.75	
2129		1.93		0.36	
2132	EN71-3	1.723		0.09	
2135		-----		-----	
2137		-----		-----	
2165	EN71-3	<1		-----	
2172	EN71-3	<5		-----	
2184	EN71-3	1.78		0.16	
2190	EN71-3	1.6		-0.08	
2201	EN71-3	1.85		0.26	
2213	EN71-3	1.59		-0.09	
2230	EN71-3	<2		-----	
2238	EN71-3	1.72		0.08	
2241	EN71-3	1.327		-0.44	
2247	EN71-3	1.6		-0.08	
2250	EN71-3	1.6492		-0.01	
2256	EN71-3	<2		-----	
2271		-----		-----	
2290	EN71-3	1.70		0.06	
2293	EN71-3	1.17		-0.65	
2294	EN71-3	< 2.5		-----	
2296	In house	1.2553		-0.54	
2297	EN71-3	<5		-----	
2301	EN71-3	0.80	C	-1.15	First reported 0
2320	EN71-3	1.00		-0.88	
2330	EN71-3	ND		-----	
2350	EN71-3	1.558		-0.13	
2370	EN71-3	1.74		0.11	
2375	EN71-3	1.8		0.19	
2385	EN71-3	2.06		0.54	
2410	EN71-3	1.2		-0.61	
2429	EN71-3	1.78		0.16	
2431		-----		-----	
2432	EN71-3	1.3679		-0.39	
2433		-----		-----	
2442	EN71-3	1.93		0.36	
2445	EN71-3	1.27		-0.52	
2446	EN71-3	2.083654	C	0.57	First reported 2083.654
2459	EN71-3	ND		-----	
2475		-----		-----	
2495		-----		-----	
2497		2.09		0.58	
2500	EN71-3	ND		-----	
2509		-----		-----	
2580	EN71-3	2.1		0.59	
2582	EN71-3	1.11		-0.73	
2590	EN71-3	1.3638		-0.39	
2637	EN71-3	1.94		0.38	
2642	F963	<5		-----	
2645		-----		-----	
2674		-----		-----	
2685	EN71-3	2.51		1.14	
2705	EN71-3	1.800		0.19	
2725	EN71-3	1.8743		0.29	
2728	ISO8124-3	ND		-----	
2819	In house	1.5246		-0.18	
2825	EN71-3	1.388	C	-0.36	First reported 0.407
3116	EN71-3	1.63		-0.04	
3117	EN71-3	1.843		0.25	
3118	EN71-3	<5		-----	
3146	EN71-3	1.86		0.27	
3150	EN71-3	1.80		0.19	
3153	EN71-3	1.60		-0.08	
3154	EN71-3	1.65		-0.01	
3167	EN71-3	nd		-----	
3172	EN71-3	1.65		-0.01	
3176	EN71-3	1.78		0.16	
3182	EN71-3	ND		-----	
3185	EN71-3	<5		-----	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	1.76		0.14	
3191	EN71-3	1.6708		0.02	
3197	EN71-3	1.9		0.32	
3200	EN71-3	1.74		0.11	
3209	EN71-3	<10.0		-----	
3214	EN71-3	1.7		0.06	
3216	EN71-3	1.134		-0.70	
3218	EN71-3	1.84		0.24	
3220	EN71-3	1.2111		-0.60	
3225	EN71-3	ND		-----	
3228	EN71-3	1.60		-0.08	
3233	EN71-3	1.7993		0.19	
3237	EN71-3	1.80		0.19	
3246	EN71-3	1.459		-0.27	
3248		1.6		-0.08	
8005		-----		-----	

	normality	OK
	n	63
	outliers	0
	mean (n)	1.6581
	st.dev. (n)	0.30557
	R(calc.)	0.8556
	st.dev.(RR prEN71-3:13)	0.74616
	R(RR prEN71-3:13)	2.0893
Compare		
	R(RR prEN71-3:18)	0.5618



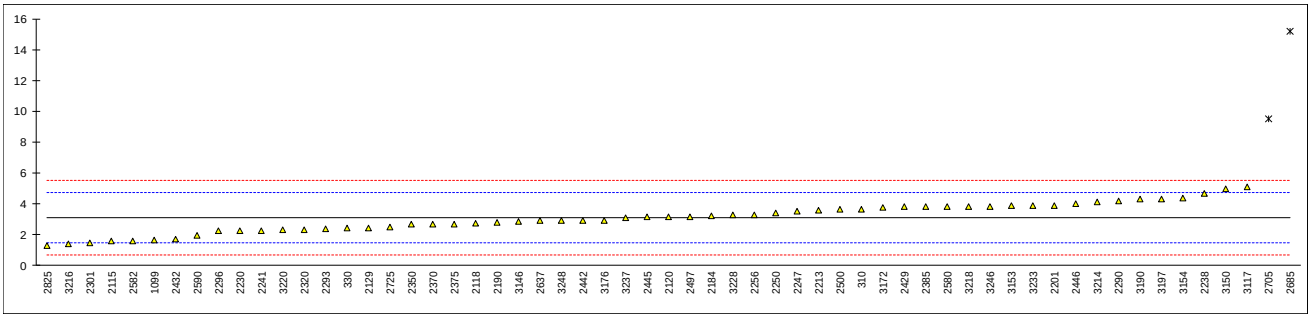


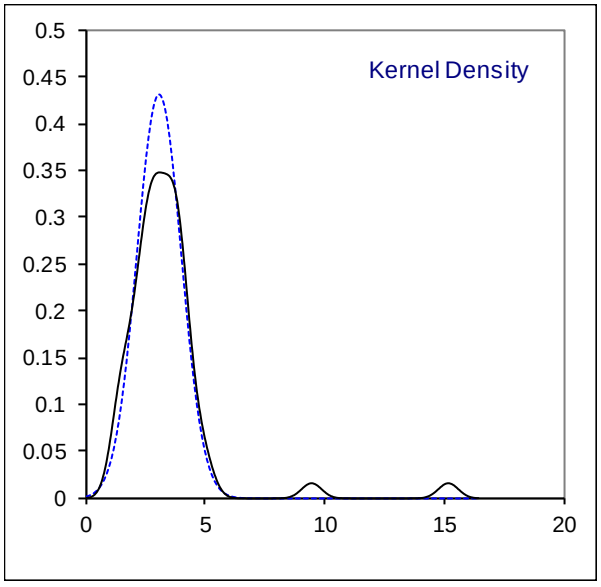
Determination of migration of Lead as Pb on plaster/chalk sample #18540; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	3.634		0.67	
330	EN71-3	2.438		-0.81	
551	EN71-3	ND		-----	
1051	EN71-3	<5		-----	
1099	EN71-3	1.64		-1.81	
2115	EN71-3	1.59		-1.87	
2118	EN71-3	2.705		-0.48	
2120	EN71-3	3.17		0.10	
2129		2.44		-0.81	
2132	EN71-3	<10		-----	
2135		-----		-----	
2137		-----		-----	
2165	EN71-3	<2.5		-----	
2172	EN71-3	<5		-----	
2184	EN71-3	3.21		0.15	
2190	EN71-3	2.8		-0.36	
2201	EN71-3	3.90		1.01	
2213	EN71-3	3.6		0.63	
2230	EN71-3	2.23		-1.07	
2238	EN71-3	4.68		1.98	
2241	EN71-3	2.254		-1.04	
2247	EN71-3	3.5		0.51	
2250	EN71-3	3.40557		0.39	
2256	EN71-3	3.269		0.22	
2271		-----		-----	
2290	EN71-3	4.2		1.38	
2293	EN71-3	2.36		-0.91	
2294	EN71-3	< 5		-----	
2296	In house	2.2233		-1.08	
2297	EN71-3	<5		-----	
2301	EN71-3	1.48	C	-2.01	First reported 0
2320	EN71-3	2.317		-0.96	
2330	EN71-3	ND		-----	
2350	EN71-3	2.678		-0.51	
2370	EN71-3	2.68		-0.51	
2375	EN71-3	2.7		-0.49	
2385	EN71-3	3.79		0.87	
2410	EN71-3	<5		-----	
2429	EN71-3	3.79		0.87	
2431		-----		-----	
2432	EN71-3	1.6824		-1.75	
2433		-----		-----	
2442	EN71-3	2.94	C	-0.19	First reported 24.4
2445	EN71-3	3.14		0.06	
2446	EN71-3	4.005583	C	1.14	First reported 4005.583
2459	EN71-3	ND		-----	
2475		-----		-----	
2495		-----		-----	
2497		3.17		0.10	
2500	EN71-3	3.623		0.66	
2509		-----		-----	
2580	EN71-3	3.8		0.88	
2582	EN71-3	1.60		-1.86	
2590	EN71-3	1.9382		-1.44	
2637	EN71-3	2.9		-0.24	
2642	F963	<5		-----	
2645		-----		-----	
2674		-----		-----	
2685	EN71-3	15.20	R(0.01)	15.06	
2705	EN71-3	9.476	R(0.01)	7.94	
2725	EN71-3	2.5107		-0.72	
2728	ISO8124-3	ND		-----	
2819	In house	<10		-----	
2825	EN71-3	1.307		-2.22	
3116		-----		-----	
3117	EN71-3	5.067		2.46	
3118	EN71-3	<5		-----	
3146	EN71-3	2.86		-0.29	
3150	EN71-3	4.94		2.30	
3153	EN71-3	3.87		0.97	
3154	EN71-3	4.35		1.57	
3167	EN71-3	nd		-----	
3172	EN71-3	3.73		0.79	
3176	EN71-3	2.94		-0.19	
3182	EN71-3	ND		-----	
3185	EN71-3	<5		-----	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	4.30		1.50	
3191		-----		-----	
3197	EN71-3	4.3		1.50	
3200	EN71-3	<2.0		-----	
3209	EN71-3	<10.0		-----	
3214	EN71-3	4.1		1.25	
3216	EN71-3	1.382		-2.13	
3218	EN71-3	3.80		0.88	
3220	EN71-3	2.3115		-0.97	
3225	EN71-3	ND		-----	
3228	EN71-3	3.25		0.20	
3233	EN71-3	3.8774		0.98	
3237	EN71-3	3.10		0.01	
3246	EN71-3	3.850		0.94	
3248		2.9		-0.24	
8005		-----		-----	

	normality	OK
	n	57
	outliers	2
	mean (n)	3.0917
	st.dev. (n)	0.92670
	R(calc.)	2.5948
	st.dev.(RR prEN71-3:13)	0.80385
	R(RR prEN71-3:13)	2.2508
Compare		
	R(RR prEN71-3:18)	1.3591



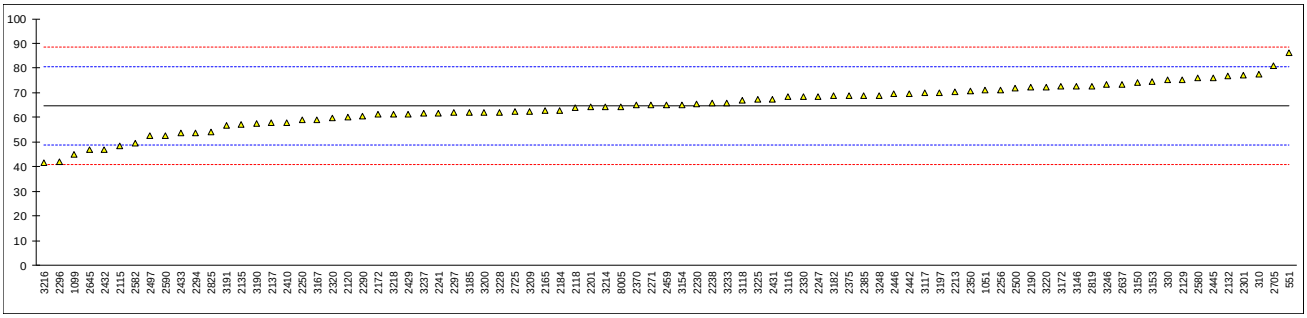


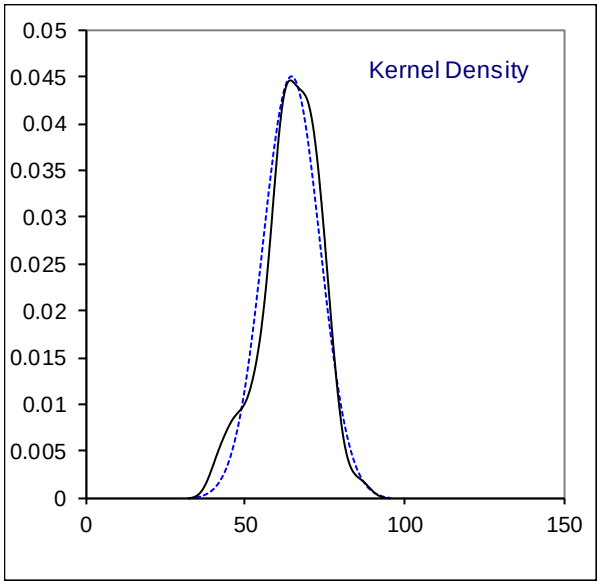
Determination of migration of Manganese as Mn on plaster/chalk sample #18540; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	77.71		1.65	
330	EN71-3	75.29		1.34	
551	EN71-3	86.35		2.74	
1051	EN71-3	71.068		0.81	
1099	EN71-3	45.20		-2.47	
2115	EN71-3	48.30		-2.08	
2118	EN71-3	64.035		-0.08	
2120	EN71-3	60.1		-0.58	
2129		75.4		1.36	
2132	EN71-3	76.87		1.54	
2135		57.05		-0.97	
2137	EN71-3	57.9		-0.86	
2165	EN71-3	62.6		-0.27	
2172	EN71-3	61.10		-0.46	
2184	EN71-3	62.84		-0.23	
2190	EN71-3	72.1		0.94	
2201	EN71-3	64.3		-0.05	
2213	EN71-3	70.3		0.71	
2230	EN71-3	65.3		0.08	
2238	EN71-3	65.69		0.13	
2241	EN71-3	61.782		-0.37	
2247	EN71-3	68.5		0.48	
2250	EN71-3	58.822		-0.74	
2256	EN71-3	71.18		0.82	
2271	EN71-3	65.0		0.04	
2290	EN71-3	60.7		-0.51	
2293		-----		-----	
2294	EN71-3	53.906		-1.37	
2296	In house	41.9806		-2.88	
2297	EN71-3	62.13		-0.32	
2301	EN71-3	77.1700		1.58	
2320	EN71-3	59.6		-0.65	
2330	EN71-3	68.4570		0.48	
2350	EN71-3	70.55		0.74	
2370	EN71-3	64.9		0.03	
2375	EN71-3	69		0.55	
2385	EN71-3	69		0.55	
2410	EN71-3	58		-0.85	
2429	EN71-3	61.36		-0.42	
2431	EN71-3	67.3201		0.33	
2432	EN71-3	47.0687		-2.23	
2433	EN71-3	53.87		-1.37	
2442	EN71-3	69.60		0.62	
2445	EN71-3	76.1		1.45	
2446	EN71-3	69.548370	C	0.62	First reported 69548.370
2459	EN71-3	65.09		0.05	
2475		-----		-----	
2495		-----		-----	
2497		52.57		-1.54	
2500	EN71-3	71.721		0.89	
2509		-----		-----	
2580	EN71-3	76		1.43	
2582	EN71-3	49.51		-1.92	
2590	EN71-3	52.7443		-1.51	
2637	EN71-3	73.5		1.12	
2642		-----		-----	
2645	EN71-3	46.89		-2.26	
2674		-----		-----	
2685		-----		-----	
2705	EN71-3	81.099		2.08	
2725	EN71-3	62.5224		-0.28	
2728		-----		-----	
2819	In house	72.7683		1.02	
2825	EN71-3	54.26		-1.32	
3116	EN71-3	68.31		0.46	
3117	EN71-3	69.896		0.66	
3118	EN71-3	66.998	C	0.29	First reported 34.627
3146	EN71-3	72.6		1.00	
3150	EN71-3	74.0		1.18	
3153	EN71-3	74.6		1.26	
3154	EN71-3	65.20		0.06	
3167	EN71-3	58.9		-0.73	
3172	EN71-3	72.5		0.99	
3176		-----		-----	
3182	EN71-3	68.682		0.51	
3185	EN71-3	62.16		-0.32	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	57.5		-0.91	
3191	EN71-3	56.7431		-1.01	
3197	EN71-3	69.9		0.66	
3200	EN71-3	62.17		-0.32	
3209	EN71-3	62.53		-0.27	
3214	EN71-3	64.3		-0.05	
3216	EN71-3	41.724		-2.91	
3218	EN71-3	61.2		-0.44	
3220	EN71-3	72.2211		0.95	
3225	EN71-3	67.24		0.32	
3228	EN71-3	62.2		-0.32	
3233	EN71-3	65.9609		0.16	
3237	EN71-3	61.61		-0.39	
3246	EN71-3	73.409		1.10	
3248		69		0.55	
8005		64.34		-0.04	

	normality	OK
	n	83
	outliers	0
	mean (n)	64.694
	st.dev. (n)	8.8660
	R(calc.)	24.825
	st.dev.(RR prEN71-3:13)	7.8927
	R(RR prEN71-3:13)	22.100
Compare		
	R(RR prEN71-3:18)	18.477



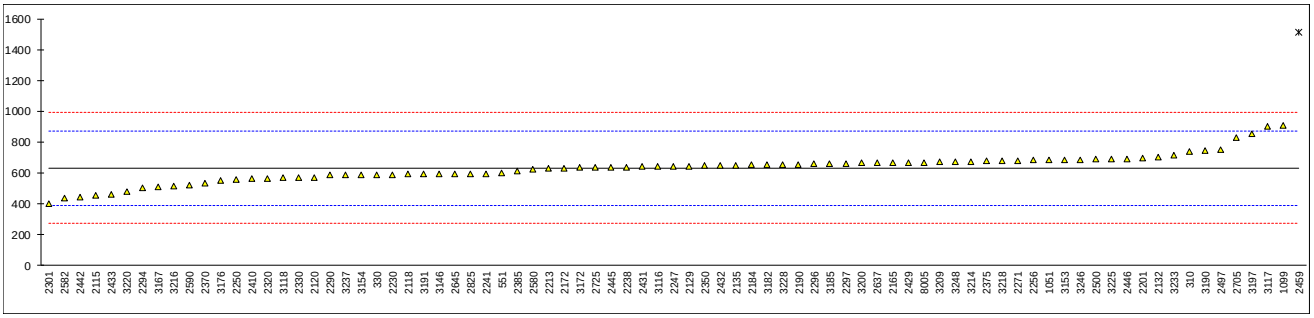


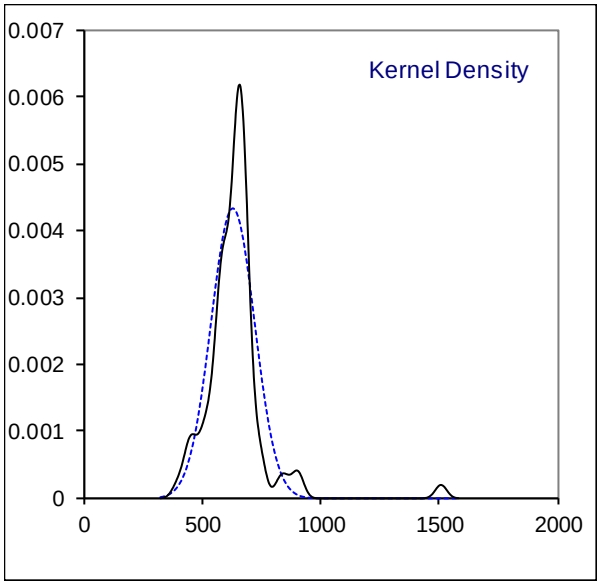
Determination of migration of Strontium as Sr on plaster/chalk sample #18540; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	740.9		0.92	
330	EN71-3	589.6		-0.34	
551	EN71-3	599		-0.26	
1051	EN71-3	686.430		0.46	
1099	EN71-3	910.44		2.33	
2115	EN71-3	455.05		-1.47	
2118	EN71-3	591.28		-0.33	
2120	EN71-3	569.0		-0.52	
2129		642		0.09	
2132	EN71-3	702.73		0.60	
2135		650.85		0.17	
2137		-----		-----	
2165	EN71-3	665.1		0.29	
2172	EN71-3	630.2		0.00	
2184	EN71-3	651.2		0.17	
2190	EN71-3	655.1		0.20	
2201	EN71-3	697.0		0.55	
2213	EN71-3	628.5		-0.02	
2230	EN71-3	590		-0.34	
2238	EN71-3	636.20		0.05	
2241	EN71-3	596.476		-0.29	
2247	EN71-3	641.8		0.09	
2250	EN71-3	554.773		-0.63	
2256	EN71-3	681.9		0.43	
2271	EN71-3	680		0.41	
2290	EN71-3	587.9		-0.36	
2293		-----		-----	
2294	EN71-3	501.501		-1.08	
2296	In house	657.4675		0.22	
2297	EN71-3	660.8		0.25	
2301	EN71-3	398.3900		-1.94	
2320	EN71-3	565		-0.55	
2330	EN71-3	568.8477		-0.52	
2350	EN71-3	646.6		0.13	
2370	EN71-3	534		-0.81	
2375	EN71-3	676		0.38	
2385	EN71-3	612		-0.16	
2410	EN71-3	561		-0.58	
2429	EN71-3	666.06		0.29	
2431	EN71-3	641.5097		0.09	
2432	EN71-3	649.8239		0.16	
2433	EN71-3	460.86		-1.42	
2442	EN71-3	441.10		-1.58	
2445	EN71-3	634.5		0.03	
2446	EN71-3	691.889872	C	0.51	First reported 691889.872
2459	EN71-3	1509.785	R(0.01)	7.34	
2475		-----		-----	
2495		-----		-----	
2497		749.72		0.99	
2500	EN71-3	688.342		0.48	
2509		-----		-----	
2580	EN71-3	625		-0.05	
2582	EN71-3	439.27		-1.60	
2590	EN71-3	519.5992		-0.93	
2637	EN71-3	665		0.29	
2642		-----		-----	
2645	EN71-3	594.90		-0.30	
2674		-----		-----	
2685		-----		-----	
2705	EN71-3	828.3		1.65	
2725	EN71-3	634.2755		0.03	
2728		-----		-----	
2819		-----		-----	
2825	EN71-3	595.6		-0.29	
3116	EN71-3	641.7		0.09	
3117	EN71-3	898.830		2.24	
3118	EN71-3	566.605		-0.54	
3146	EN71-3	592		-0.32	
3150		-----		-----	
3153	EN71-3	686.8		0.47	
3154	EN71-3	588.8		-0.35	
3167	EN71-3	508.8		-1.02	
3172	EN71-3	633.8		0.03	
3176	EN71-3	550.07		-0.67	
3182	EN71-3	653.212		0.19	
3185	EN71-3	658.18		0.23	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	745.4		0.96	
3191	EN71-3	591.5668		-0.33	
3197	EN71-3	852.5		1.85	
3200	EN71-3	663.33		0.27	
3209	EN71-3	670.52		0.33	
3214	EN71-3	673.2		0.35	
3216	EN71-3	516.456		-0.95	
3218	EN71-3	677		0.39	
3220	EN71-3	476.0288		-1.29	
3225	EN71-3	691.06		0.50	
3228	EN71-3	653.5		0.19	
3233	EN71-3	714.1082		0.70	
3237	EN71-3	588.53		-0.35	
3246	EN71-3	687.211		0.47	
3248		671		0.34	
8005		667.48		0.31	

	normality	suspect
	n	80
	outliers	1
	mean (n)	630.73
	st.dev. (n)	92.015
	R(calc.)	257.64
	st.dev.(RR prEN71-3:13)	119.839
	R(RR prEN71-3:13)	335.55
Compare		
	R(RR prEN71-3:18)	261.37



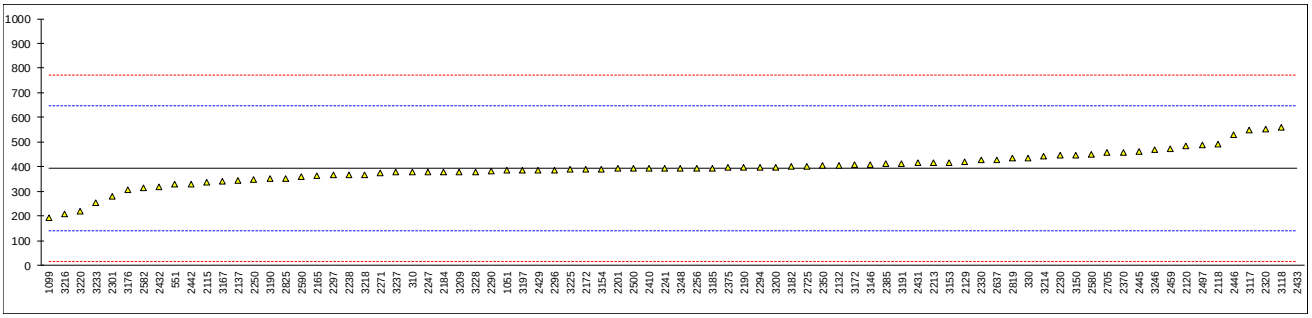


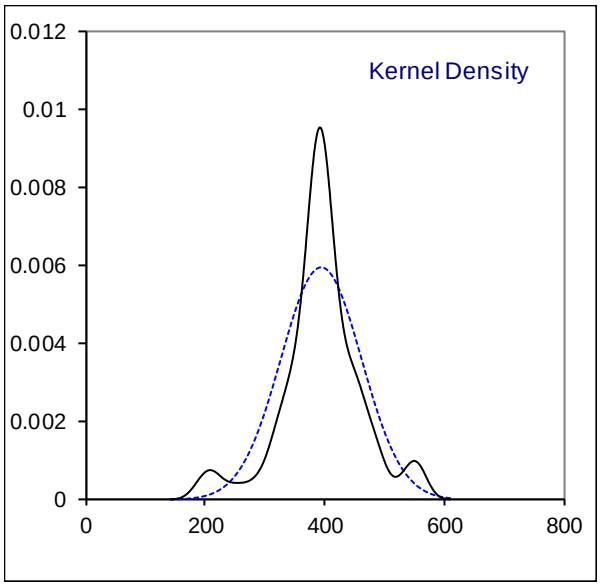
Determination of migration of Zinc as Zn on plaster/chalk sample #18540; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	378.6		-0.13	
330	EN71-3	436.9		0.34	
551	EN71-3	329.05		-0.52	
1051	EN71-3	384.271		-0.08	
1099	EN71-3	194.40		-1.59	
2115	EN71-3	336.61		-0.46	
2118	EN71-3	492.775		0.78	
2120	EN71-3	482.8		0.70	
2129		421		0.21	
2132	EN71-3	404.40		0.08	
2135		-----		-----	
2137	EN71-3	344		-0.40	
2165	EN71-3	364.9		-0.23	
2172	EN71-3	390.4		-0.03	
2184	EN71-3	379.2		-0.12	
2190	EN71-3	397.1		0.02	
2201	EN71-3	392.0		-0.02	
2213	EN71-3	416.4		0.17	
2230	EN71-3	447		0.42	
2238	EN71-3	365.86		-0.23	
2241	EN71-3	394.646		0.00	
2247	EN71-3	379.15		-0.12	
2250	EN71-3	348.676		-0.36	
2256	EN71-3	395.2		0.01	
2271	EN71-3	376		-0.15	
2290	EN71-3	383.2		-0.09	
2293		-----		-----	
2294	EN71-3	397.595	C	0.02	First reported 796.418
2296	In house	387.6051		-0.05	
2297	EN71-3	365.8		-0.23	
2301	EN71-3	282.1900		-0.89	
2320	EN71-3	551	C	1.24	First reported 31.3
2330	EN71-3	426.2695		0.25	
2350	EN71-3	403.9		0.07	
2370	EN71-3	457		0.49	
2375	EN71-3	397		0.02	
2385	EN71-3	411		0.13	
2410	EN71-3	394		0.00	
2429	EN71-3	386.42		-0.06	
2431	EN71-3	416.1229		0.17	
2432	EN71-3	318.8960		-0.60	
2433	EN71-3	37105.41	R(0.01)	290.78	
2442	EN71-3	329.11		-0.52	
2445	EN71-3	461.0		0.53	
2446	EN71-3	528.196992	C	1.06	First reported 528196.992
2459	EN71-3	474.625		0.63	
2475		-----		-----	
2495		-----		-----	
2497		489.16		0.75	
2500	EN71-3	392.132		-0.02	
2509		-----		-----	
2580	EN71-3	450		0.44	
2582	EN71-3	315.98		-0.62	
2590	EN71-3	360.6702		-0.27	
2637	EN71-3	429		0.27	
2642		-----		-----	
2645		-----		-----	
2674		-----		-----	
2685		-----		-----	
2705	EN71-3	456.5		0.49	
2725	EN71-3	402.8489		0.07	
2728		-----		-----	
2819	In house	436.6098		0.33	
2825	EN71-3	352.5		-0.33	
3116		-----		-----	
3117	EN71-3	549.602		1.23	
3118	EN71-3	558.781		1.30	
3146	EN71-3	410		0.12	
3150	EN71-3	447		0.42	
3153	EN71-3	418.0		0.19	
3154	EN71-3	391.4		-0.02	
3167	EN71-3	340.2		-0.43	
3172	EN71-3	407.6		0.10	
3176	EN71-3	305.52		-0.71	
3182	EN71-3	402.213		0.06	
3185	EN71-3	395.43		0.01	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	350.7		-0.35	
3191	EN71-3	414.2898		0.16	
3197	EN71-3	385.8		-0.07	
3200	EN71-3	398.83		0.03	
3209	EN71-3	380.03		-0.11	
3214	EN71-3	444.0		0.39	
3216	EN71-3	209.694		-1.46	
3218	EN71-3	368		-0.21	
3220	EN71-3	220.34		-1.38	
3225	EN71-3	389.37		-0.04	
3228	EN71-3	380.2		-0.11	
3233	EN71-3	252.2728		-1.13	
3237	EN71-3	377.98		-0.13	
3246	EN71-3	468.010		0.58	
3248		395		0.00	
8005		-----		-----	

	normality	suspect
	n	79
	outliers	1
	mean (n)	394.53
	st.dev. (n)	67.104
	R(calc.)	187.89
	st.dev.(RR prEN71-3:13)	126.250
	R(RR prEN71-3:13)	353.50
Compare		
	R(RR prEN71-3:18)	156.87





Determination of migration of Other Metals on plaster/chalk, sample #18540; results in mg/kg

lab	Sb	As	Ba	B	Cr	Co	Cu	Hg	Ni
310	0.035	0.472	8.295	2.568	0.281	0.464	0.551	0	1.47
330	< 2	< 0.5	< 15	< 15	0.247	< 2	< 2	< 0.5	< 2
551	ND	ND	ND	ND	ND	ND	ND	ND	ND
1051	<5	<2	<10	<10	<1	<5	<10	<5	<5
1099	<0.05	0.46	4.86	2.46	<0.5	0.14	<0.5	<0.05	1.17
2115	-----	0.20	3.16	4.27	0.14	0.16	0.24	-----	-----
2118	0	0.265	5.75	8.835	0.21	0.22	0.445	0	0.26
2120	< 1,3	0.41	5.4	6.4	0.230	< 1,3	< 2,5	< 0,05	< 1,3
2129	<1	0.406	<10	<10	<1	<0,5	<10	<0,1	<1
2132	<10	<2.5	<25	<25	<10	<10	<15	<10	<10
2135	-----	-----	6.32	-----	-----	-----	-----	-----	-----
2137	-----	-----	22.4	-----	-----	-----	-----	-----	-----
2165	<5	<5	<2.5	<10	<2.5	<2.5	<2.5	<2.5	<2.5
2172	<5	<5	<5	<5	<5	<5	<5	<5	<5
2184	<1	<0.5	4.83	<10	<0.1	<0.5	<2.5	<0.5	<2.5
2190	<10	<0.5	<50	<50	<5	<1	<50	<1	<10
2201	<10	<1	<10	<50	<5	<1	<10	<1	<10
2213	<10	<1	<50	<50	<10	<5	<50	<5	<10
2230	<2	<2	4.59	<2	0.18	<2	<2	<2	<2
2238	<10	<1	<10	<50	<1	<1	<10	<1	<10
2241	0.005	0.390	4.106	4.665	0.246	0.225	0.356	0.001	0.275
2247	< 5	< 0.5	6.8	8.2	< 5	< 0.5	< 5	< 0.5	< 5
2250	<0,1	0.28673	6.3113	3.40737	0.18914	0.19420	<1	<0,1	0.23649
2256	<2	<2	4.212	3.478	<2	<2	<2	<2	<2
2271	-----	-----	-----	-----	-----	-----	-----	-----	-----
2290	<10	<1	<10	<50	<5	<1	<10	<1	<10
2293	0	0	2.80	-----	0	-----	-----	0	-----
2294	< 5	< 5	4.178	< 5	< 2.5	< 2.5	< 2.5	ND	< 2.5
2296	<0.63	<0.74	32.0178	11.4167	<0.10	<0.093	<0.28	<0.20	<0.48
2297	<5	<5	<50	<50	<5	<5	<50	<5	<5
2301	0	0	4.5800	15.9900	0	0	25.9400	0	0
2320	0.026	0.194	2.48	23.1	0.184	0.241	0.521	-----	0.334
2330	ND	ND	ND	ND	ND	ND	ND	10.7910	ND
2350	<1.0	0.5693	<50	<50	0.2857	<0.5	<50	<0.5	<10
2370	<1	<0.5	<50	<50	0.242	<0.5	<50	<0.5	<10
2375	-----	-----	-----	-----	0.28	-----	-----	-----	-----
2385	<1	<1	5.25	7.9	<1	<1	<1	<0,1	<1
2410	<10	<1	<10	<50	<5	<10	<10	<1	<10
2429	<10	<1.0	<10	<50	<5.0	<1.0	<10	<1.0	<10
2431	-----	-----	-----	-----	-----	-----	-----	-----	-----
2432	-----	-----	9.6576	7.6989	-----	-----	-----	-----	-----
2433	-----	-----	-----	24.36	-----	-----	-----	-----	-----
2442	-----	-----	-----	-----	-----	-----	-----	-----	-----
2445	0.0233	0.298	5.67	6.50	0.303	0.253	0.532	<0.5	0.387
2446	0.079327	0.432779	6.558916	21.956863	0.385102	0.299352	0.432421	-----	0.277261
2459	ND	ND	45.290	122.395	ND	ND	16.130	ND	ND
2475	-----	-----	-----	-----	-----	-----	-----	-----	-----
2495	-----	-----	-----	-----	-----	-----	-----	-----	-----
2497	-----	-----	5.92	-----	-----	-----	-----	-----	-----
2500	ND	ND	4.312	ND	ND	ND	ND	ND	ND
2509	-----	-----	-----	-----	-----	-----	-----	-----	-----
2580	-----	-----	5.7	-----	-----	-----	-----	-----	-----
2582	-----	0.26	3.92	8.03	-----	0.78	-----	-----	0.37
2590	< L.O.Q.	< L.O.Q.	5.4716	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	6.6364
2637	<0.1	<1	6.4	10.9	<1	0.38	<1	<0.1	<1
2642	<5	<5	<5	-----	<5	-----	-----	<10	-----
2645	-----	-----	-----	-----	-----	-----	-----	-----	-----
2674	-----	-----	-----	-----	-----	-----	-----	-----	-----
2685	-----	-----	-----	-----	0	10.06	-----	-----	1.76
2705	0.0412	0.856	7.1775	7.46	0.75	0.32	0.00	0.0848	0.525
2725	<0,067	0.30395	5.0482	6.5186	0.24055	0.24708	<1,67	-----	0.32308
2728	ND	ND	ND	-----	ND	-----	-----	ND	-----
2819	-----	0.2873	<25	-----	<5	<2.5	-----	<0.05	<3
2825	-----	-----	4.428	-----	0.083	0.267	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----
3117	0	0	17.059	16.303	0	0	0	0	0
3118	<5	<5	<5	<50	<5	<5	<5	<5	<5
3146	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3150	-----	-----	34.0	-----	-----	-----	1.47	-----	-----
3153	<10	<1.0	<10	<50	<5	<1.0	<10	<1.0	<10
3154	-----	0.78	5.15	-----	1.28	0.28	18.24	-----	-----
3167	nd	nd	nd	nd	nd	nd	nd	nd	nd
3172	< 10	< 1	< 50	< 50	< 10	< 5	< 50	< 5	< 10
3176	-----	-----	4.77	-----	79.94	-----	-----	-----	-----
3182	ND	ND	ND	ND	ND	ND	ND	ND	ND
3185	<10	<1.0	<10	<50	<5	<1	<10	<1.0	<10

lab	Sb	As	Ba	B	Cr	Co	Cu	Hg	Ni
3190	<10	<1.0	<10	<50	<5.0	<1.0	<10	<1.0	<10
3191	-----	-----	5.1609	-----	0.4485	-----	-----	-----	-----
3197	<10	<0,5	<50	<50	0.33	<1	<10	<1	<10
3200	<5.0	<5.0	<10.0	<10.0	<1.0	<5.0	<10.0	<1.0	<10.0
3209	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
3214	<10	<1	<10	<50	<1	<1	<10	<1	<10
3216	nd	0.270	4.038	3.298	0.143	0.181	0.197	nd	0.483
3218	<10	<10	<10	<50	<1	<10	<10	<10	<10
3220	ND	ND	5.0053	ND	ND	0.6500	1.10	ND	1.0875
3225	ND	ND	ND	ND	ND	ND	ND	ND	ND
3228	<1	<0.5	4.90	<10	<1	<0.5	<2.5	<0.5	<2.5
3233	< 5	0.4234	5.5303	< 5	0.2651	< 0.5	< 5	< 0.5	< 5
3237	-----	-----	-----	-----	0.27	-----	-----	-----	-----
3246	n.d	n.d	n.d	n.d	0.265	n.d	n.d	n.d	n.d
3248	ND	ND	ND	ND	ND	ND	ND	ND	ND
8005	-----	-----	-----	-----	-----	-----	-----	-----	-----

Determination of migration of Other Metals on plaster/chalk sample #18540; results in mg/kg

lab	Se	Sn
310	0.6	0.011
330	< 2	< 0.2
551	ND	ND
1051	<5	<2.5
1099	0.94	<5.0
2115	0.38	1.47
2118	0.395	0
2120	< 1,3	< 1,3
2129	<1	<3
2132	<10	<10
2135	-----	-----
2137	-----	-----
2165	<10	<1
2172	<5	<5
2184	<2.5	<0.2
2190	<5	<4
2201	<5	<10
2213	<10	<50
2230	<2	<2
2238	<5	<0.1
2241	0.441	0.001
2247	< 5	< 5
2250	<1	<0,1
2256	<2	<2
2271	-----	-----
2290	<5	<10
2293	0	-----
2294	< 5	< 5
2296	<1.0	<1.4
2297	<2	<5
2301	0	0
2320	0.717	0.072
2330	ND	ND
2350	<5	<0.36
2370	<5	<0.36
2375	-----	-----
2385	1.39	<1
2410	<10	<10
2429	<5.0	<10
2431	-----	-----
2432	-----	-----
2433	-----	-----
2442	-----	-----
2445	0.258	0.0155
2446	0.264072	0.053923
2459	ND	ND
2475	-----	-----
2495	-----	-----
2497	-----	-----
2500	ND	ND
2509	-----	-----
2580	-----	-----
2582	0.38	-----
2590	< L.O.Q.	< L.O.Q.
2637	<0.5	<1
2642	<5	-----
2645	-----	-----
2674	-----	-----
2685	-----	-----
2705	0.5055	0.0840
2725	0.4224	<0,83
2728	ND	-----
2819	0.4540	-----
2825	-----	-----
3116	-----	-----
3117	0	0
3118	<5	<5
3146	n.d.	n.d.
3150	-----	-----
3153	<5	<10
3154	-----	2.17
3167	nd	nd
3172	< 10	< 50
3176	-----	-----
3182	ND	ND
3185	<5	<10

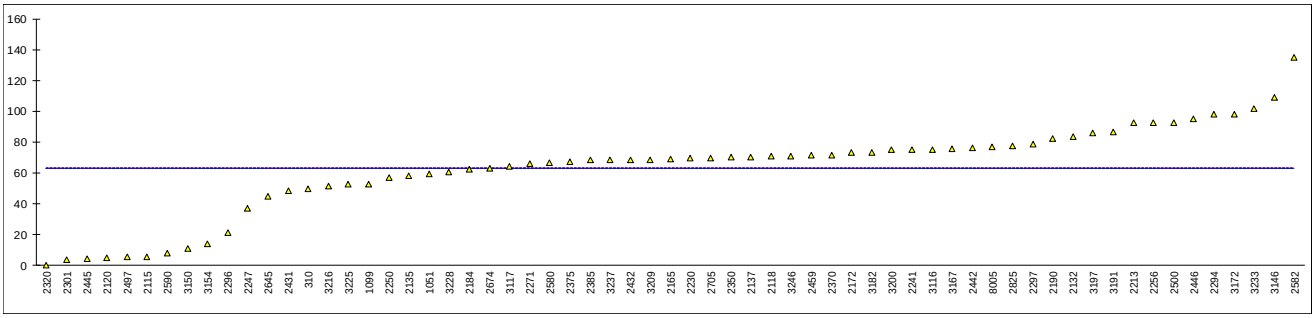
lab	Se	Sn
3190	<5.0	<10
3191	-----	-----
3197	<1	<10
3200	<10.0	<10.0
3209	<10.0	<10.0
3214	<5	<10
3216	0.608	nd
3218	<10	<3.9
3220	ND	ND
3225	ND	ND
3228	<2.5	<0.2
3233	< 5	0.0730
3237	-----	-----
3246	n.d	n.d
3248	ND	ND
8005	-----	-----

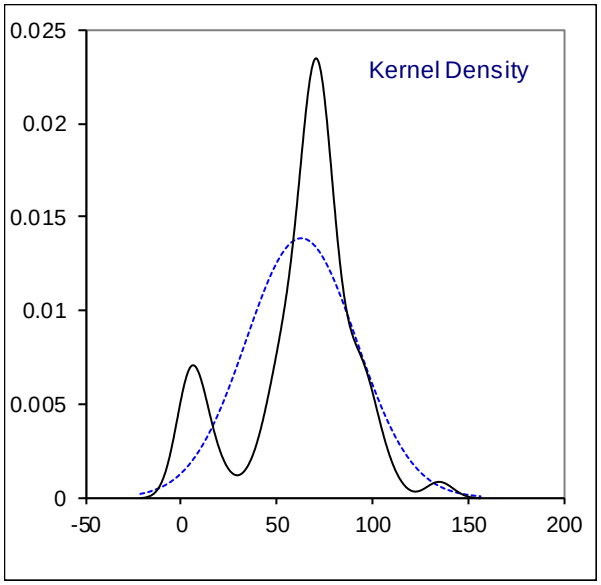
Determination of migration of Aluminium as Al on paper with ink sample #18541; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	49.55		-----	
330	EN71-3	< 15		-----	
551	EN71-3	ND		-----	
1051	EN71-3	59.126		-----	
1099	EN71-3	52.90		-----	
2115	EN71-3	5.6	C	-----	First reported 3.99
2118	EN71-3	70.68		-----	
2120	EN71-3	5.1		-----	
2129		<100		-----	
2132	EN71-3	83.24		-----	
2135		58.08		-----	
2137	EN71-3	70.5		-----	
2165	EN71-3	69.0		-----	
2172	EN71-3	73.16		-----	
2184	EN71-3	62.4		-----	
2190	EN71-3	82.2		-----	
2201	EN71-3	<300		-----	
2213	EN71-3	92.3		-----	
2230	EN71-3	69.8	C	-----	First reported 6.98
2238	EN71-3	<300		-----	
2241	EN71-3	74.971		-----	
2247	EN71-3	37.2		-----	
2250	EN71-3	57.177		-----	
2256	EN71-3	92.82		-----	
2271	EN71-3	66.2		-----	
2290	EN71-3	<300		-----	
2293		-----		-----	
2294	EN71-3	97.800		-----	
2296	In house	21.2094		-----	
2297	EN71-3	78.82		-----	
2301	EN71-3	3.90	C	-----	First reported 11.09
2320	EN71-3	0.26	C	-----	First reported 0.064
2330	EN71-3	ND		-----	
2350	EN71-3	70.44		-----	
2370	EN71-3	71.5		-----	
2375	EN71-3	67		-----	
2385	EN71-3	68.3		-----	
2410	EN71-3	<100		-----	
2429	EN71-3	<300		-----	
2431	EN71-3	48.4026	C	-----	First reported 91.91
2432	EN71-3	68.5220		-----	
2433		-----		-----	
2442	EN71-3	76.47		-----	
2445	EN71-3	4.19		-----	
2446	EN71-3	95.237491	C	-----	First reported 95237.491
2459	EN71-3	71.200		-----	
2475		-----		-----	
2495		-----		-----	
2497	EN71-3	5.41		-----	
2500	EN71-3	92.832		-----	
2509		-----		-----	
2580	EN71-3	66.8		-----	
2582	EN71-3	134.92		-----	
2590	EN71-3	8.0352		-----	
2637		<50		-----	
2642		-----		-----	
2645	EN71-3	45.03		-----	
2674	EN71-3	63.1		-----	
2685		-----		-----	
2705	EN71-3	69.907		-----	
2725		-----		-----	
2728		-----		-----	
2819		-----		-----	
2825	EN71-3	77.75		-----	
3116	EN71-3	75.33		-----	
3117	EN71-3	63.981		-----	
3118	EN71-3	<50		-----	
3146	EN71-3	109		-----	
3150	EN71-3	10.7	C	-----	First reported 142
3153	EN71-3	<300		-----	
3154	EN71-3	14.09		-----	
3167	EN71-3	75.7		-----	
3172	EN71-3	98.2		-----	
3176		-----		-----	
3182	EN71-3	73.546		-----	
3185	EN71-3	<300		-----	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	<300		-----	
3191	EN71-3	86.7878		-----	
3197	EN71-3	86.2		-----	
3200	EN71-3	74.83		-----	
3209	EN71-3	68.71		-----	
3214	EN71-3	<300		-----	
3216	EN71-3	51.685		-----	
3218	EN71-3	<300		-----	
3220	EN71-3	ND		-----	
3225	EN71-3	52.69		-----	
3228	EN71-3	60.4		-----	
3233	EN71-3	101.4186		-----	
3237	EN71-3	68.5		-----	
3246	EN71-3	70.943		-----	
3248	EN71-3	ND		-----	
8005		77.15		-----	

	normality	OK
	n	63
	outliers	0
	mean (n)	62.840
	st.dev. (n)	28.8614
	R(calc.)	80.812
	st.dev.(RR prEN71-3:13)	(43.3594)
	R(RR prEN71-3:13)	(121.406)
Compare		
	R(RR prEN71-3:18)	(12.317)



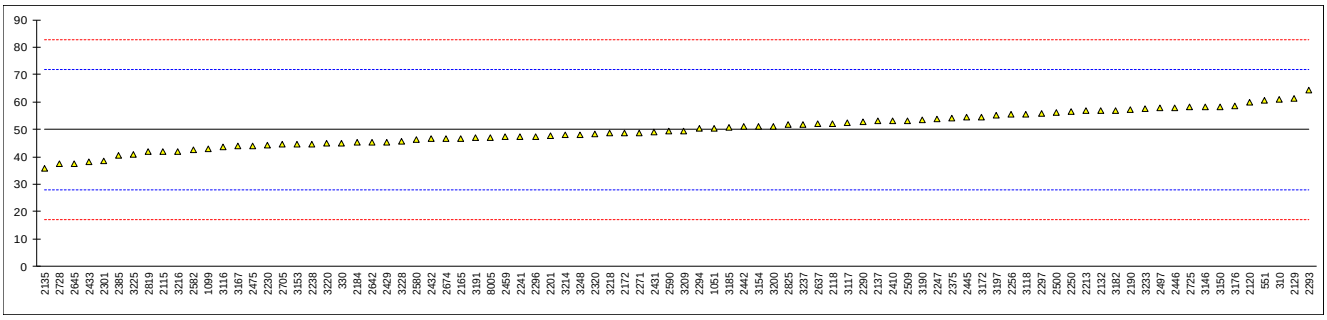


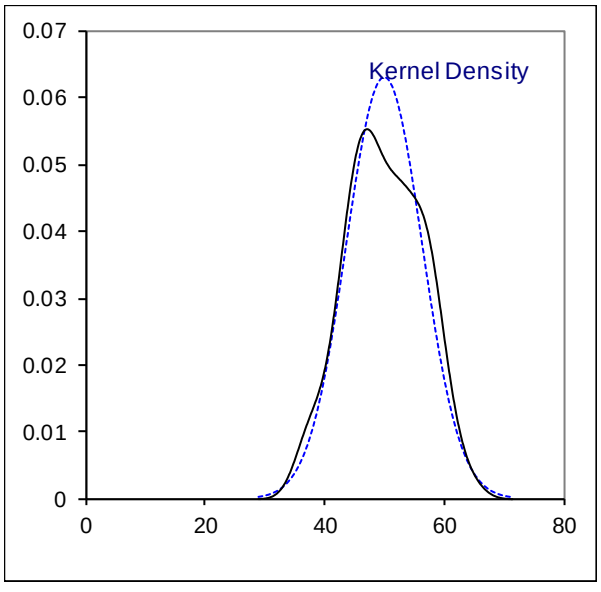
Determination of migration of Barium as Ba on paper with ink sample #18541; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	60.99		1.01	
330	EN71-3	45.03		-0.44	
551	EN71-3	60.66	C	0.98	First reported 24.54
1051	EN71-3	50.511		0.06	
1099	EN71-3	42.87		-0.64	
2115	EN71-3	42.04		-0.72	
2118	EN71-3	52.12		0.20	
2120	EN71-3	60.0		0.92	
2129		61.1		1.02	
2132	EN71-3	56.9		0.64	
2135		35.88		-1.28	
2137	EN71-3	53.0		0.28	
2165	EN71-3	46.8		-0.28	
2172	EN71-3	48.62		-0.12	
2184	EN71-3	45.20		-0.43	
2190	EN71-3	57.2		0.67	
2201	EN71-3	47.5		-0.22	
2213	EN71-3	56.8		0.63	
2230	EN71-3	44.3		-0.51	
2238	EN71-3	44.71		-0.47	
2241	EN71-3	47.361		-0.23	
2247	EN71-3	53.8		0.36	
2250	EN71-3	56.4317		0.60	
2256	EN71-3	55.38		0.50	
2271	EN71-3	48.8		-0.10	
2290	EN71-3	52.7		0.26	
2293	EN71-3	64.31	C	1.31	First reported 3.61
2294	EN71-3	50.300		0.04	
2296	In house	47.3904		-0.23	
2297	EN71-3	55.81		0.54	
2301	EN71-3	38.4500		-1.04	
2320	EN71-3	48.5		-0.13	
2330	EN71-3	ND		-----	
2350	EN71-3	<50		-----	
2370	EN71-3	<50		-----	
2375	EN71-3	54		0.37	
2385	EN71-3	40.4		-0.86	
2410	EN71-3	53		0.28	
2429	EN71-3	45.34		-0.41	
2431	EN71-3	49.0814		-0.07	
2432	EN71-3	46.4889		-0.31	
2433		38.13		-1.07	
2442	EN71-3	50.96		0.10	
2445	EN71-3	54.4		0.41	
2446	EN71-3	57.981164	C	0.74	First reported 57981.164
2459	EN71-3	47.345		-0.23	
2475	EN71-3	43.92		-0.54	
2495		-----		-----	
2497	EN71-3	57.71		0.71	
2500	EN71-3	56.132		0.57	
2509	F963	53		0.28	
2580	EN71-3	46.3		-0.33	
2582	EN71-3	42.56		-0.67	
2590	EN71-3	49.2437		-0.06	
2637		52		0.19	
2642	F963	45.275		-0.42	
2645	EN71-3	37.40		-1.14	
2674	EN71-3	46.7490		-0.29	
2685		-----		-----	
2705	EN71-3	44.6		-0.48	
2725	EN71-3	58.0475		0.74	
2728	ISO8124-3	37.38		-1.14	
2819	In house	42.0199		-0.72	
2825	EN71-3	51.65		0.16	
3116	EN71-3	43.45		-0.59	
3117	EN71-3	52.543		0.24	
3118	EN71-3	55.595		0.52	
3146	EN71-3	58.1		0.75	
3150	EN71-3	58.2		0.76	
3153	EN71-3	44.7		-0.47	
3154	EN71-3	51.11		0.11	
3167	EN71-3	43.9		-0.55	
3172	EN71-3	54.4		0.41	
3176	EN71-3	58.55		0.79	
3182	EN71-3	56.996		0.65	
3185	EN71-3	50.72		0.08	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	53.3		0.31	
3191	EN71-3	46.9068		-0.27	
3197	EN71-3	55.0		0.47	
3200	EN71-3	51.21		0.12	
3209	EN71-3	49.27		-0.06	
3214	EN71-3	48.0		-0.17	
3216	EN71-3	42.044		-0.72	
3218	EN71-3	48.6		-0.12	
3220	EN71-3	44.8349		-0.46	
3225	EN71-3	41.02		-0.81	
3228	EN71-3	45.7		-0.38	
3233	EN71-3	57.3917		0.68	
3237	EN71-3	51.9		0.18	
3246	EN71-3	n.d		-----	
3248	EN71-3	48		-0.17	
8005		46.94		-0.27	

	normality	OK
	n	86
	outliers	0
	mean (n)	49.895
	st.dev. (n)	6.3113
	R(calc.)	17.672
	st.dev.(RR prEN71-3:13)	10.9769
	R(RR prEN71-3:13)	30.735
Compare		
	R(RR prEN71-3:18	26.125



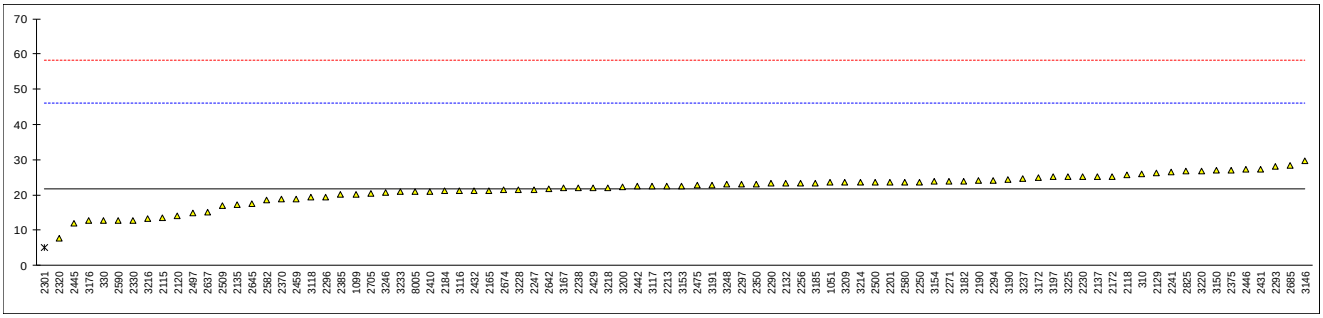


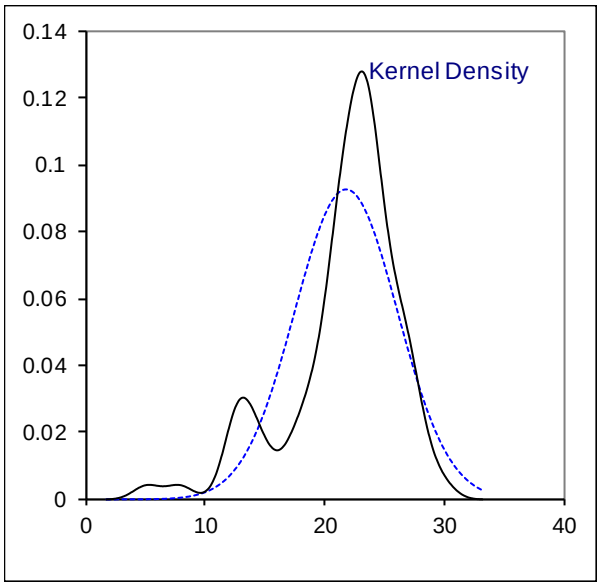
Determination of migration of Cadmium as Cd on paper with ink sample #18541; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	25.99		0.35	
330	EN71-3	12.67		-0.75	
551	EN71-3	ND		-----	
1051	EN71-3	23.520		0.14	
1099	EN71-3	20.18		-0.13	
2115	EN71-3	13.6	C	-0.67	First reported 9.86
2118	EN71-3	25.575		0.31	
2120	EN71-3	14.2		-0.62	
2129		26.3		0.37	
2132	EN71-3	23.39		0.13	
2135		17.33		-0.36	
2137	EN71-3	25.3		0.29	
2165	EN71-3	21.3		-0.04	
2172	EN71-3	25.30		0.29	
2184	EN71-3	21.1		-0.05	
2190	EN71-3	24.2		0.20	
2201	EN71-3	23.7		0.16	
2213	EN71-3	22.6		0.07	
2230	EN71-3	25.2		0.28	
2238	EN71-3	22.08		0.03	
2241	EN71-3	26.613		0.40	
2247	EN71-3	21.6		-0.01	
2250	EN71-3	23.7034		0.16	
2256	EN71-3	23.41		0.13	
2271	EN71-3	23.9		0.18	
2290	EN71-3	23.2		0.12	
2293	EN71-3	28.04	C	0.51	First reported 0
2294	EN71-3	24.245		0.20	
2296	In house	19.2561		-0.21	
2297	EN71-3	23.06		0.11	
2301	EN71-3	5.07	C,R(0.05)	-1.37	First reported 6.83
2320	EN71-3	7.8	C	-1.15	First reported 3.88
2330	EN71-3	12.7700		-0.74	
2350	EN71-3	23.17		0.12	
2370	EN71-3	18.8		-0.24	
2375	EN71-3	27		0.43	
2385	EN71-3	20.1		-0.14	
2410	EN71-3	21		-0.06	
2429	EN71-3	22.10		0.03	
2431	EN71-3	27.2548		0.45	
2432	EN71-3	21.2073		-0.05	
2433		-----		-----	
2442	EN71-3	22.48		0.06	
2445	EN71-3	12.0		-0.80	
2446	EN71-3	27.196586	C	0.45	First reported 27196.586
2459	EN71-3	18.955		-0.23	
2475	EN71-3	22.72		0.08	
2495		-----		-----	
2497	EN71-3	14.78		-0.57	
2500	EN71-3	23.632		0.15	
2509	F963	17		-0.39	
2580	EN71-3	23.7		0.16	
2582	EN71-3	18.58		-0.26	
2590	EN71-3	12.7143		-0.74	
2637		15.2		-0.54	
2642	F963	21.7		-0.01	
2645	EN71-3	17.61	C	-0.34	First reported 12.63
2674	EN71-3	21.4		-0.03	
2685	EN71-3	28.39		0.54	
2705	EN71-3	20.5		-0.10	
2725		-----		-----	
2728	ISO8124-3	ND		-----	
2819		-----	W	-----	Test result withdrawn, reported 9.3567
2825	EN71-3	26.68		0.40	
3116	EN71-3	21.18		-0.05	
3117	EN71-3	22.515		0.06	
3118	EN71-3	19.230	C	-0.21	First reported 13.7
3146	EN71-3	29.8		0.66	
3150	EN71-3	26.9		0.42	
3153	EN71-3	22.6		0.07	
3154	EN71-3	23.77		0.16	
3167	EN71-3	22.0		0.02	
3172	EN71-3	24.9		0.26	
3176	EN71-3	12.66		-0.75	
3182	EN71-3	23.94		0.18	
3185	EN71-3	23.42		0.14	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	24.3		0.21	
3191	EN71-3	22.8473		0.09	
3197	EN71-3	25.1		0.27	
3200	EN71-3	22.17		0.03	
3209	EN71-3	23.52		0.14	
3214	EN71-3	23.6		0.15	
3216	EN71-3	13.377		-0.69	
3218	EN71-3	22.1		0.03	
3220	EN71-3	26.73	C	0.41	First reported 10.6878
3225	EN71-3	25.11		0.27	
3228	EN71-3	21.4		-0.03	
3233	EN71-3	20.8413		-0.08	
3237	EN71-3	24.6		0.23	
3246	EN71-3	20.596		-0.10	
3248	EN71-3	23		0.10	
8005		20.86		-0.07	

	normality	OK
	n	85
	outliers	1
	mean (n)	21.766
	st.dev. (n)	4.3042
	R(calc.)	12.052
	st.dev.(RR prEN71-3:13)	12.1887
	R(RR prEN71-3:13)	34.128
Compare		
	R(RR prEN71-3:18)	7.374



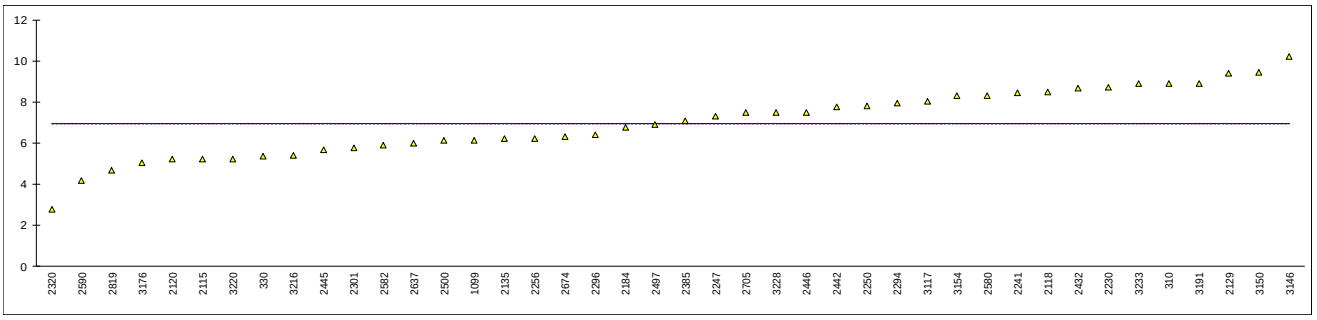


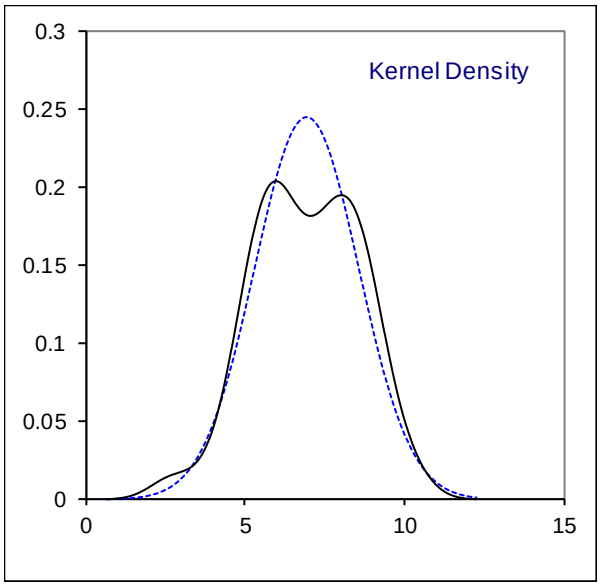
Determination of migration of Manganese as Mn on paper with ink sample #18541; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	8.893		-----	
330	EN71-3	5.37		-----	
551	EN71-3	ND		-----	
1051	EN71-3	<10		-----	
1099	EN71-3	6.14		-----	
2115	EN71-3	5.22		-----	
2118	EN71-3	8.485		-----	
2120	EN71-3	5.2		-----	
2129		9.4		-----	
2132	EN71-3	<25		-----	
2135		6.22		-----	
2137		-----		-----	
2165	EN71-3	<10		-----	
2172	EN71-3	<10		-----	
2184	EN71-3	6.75		-----	
2190	EN71-3	<50		-----	
2201	EN71-3	<10		-----	
2213	EN71-3	<50		-----	
2230	EN71-3	8.72		-----	
2238	EN71-3	<10		-----	
2241	EN71-3	8.435		-----	
2247	EN71-3	7.3		-----	
2250	EN71-3	7.8116		-----	
2256	EN71-3	6.232		-----	
2271		-----		-----	
2290	EN71-3	<10		-----	
2293		-----		-----	
2294	EN71-3	7.930		-----	
2296	In house	6.4001		-----	
2297	EN71-3	<50		-----	
2301	EN71-3	5.78	C	-----	First reported 18.96
2320	EN71-3	2.77		-----	
2330	EN71-3	ND		-----	
2350	EN71-3	<50		-----	
2370	EN71-3	<50		-----	
2375		-----		-----	
2385	EN71-3	7.09		-----	
2410	EN71-3	<10		-----	
2429	EN71-3	<10		-----	
2431		-----		-----	
2432	EN71-3	8.6585		-----	
2433		-----		-----	
2442	EN71-3	7.74		-----	
2445	EN71-3	5.68		-----	
2446	EN71-3	7.503008	C	-----	First reported 7503.008
2459	EN71-3	ND		-----	
2475		-----		-----	
2495		-----		-----	
2497	EN71-3	6.89		-----	
2500	EN71-3	6.12		-----	
2509		-----		-----	
2580	EN71-3	8.3		-----	
2582	EN71-3	5.89		-----	
2590	EN71-3	4.1778		-----	
2637		6		-----	
2642		-----		-----	
2645		-----		-----	
2674	EN71-3	6.3		-----	
2685		-----		-----	
2705	EN71-3	7.498		-----	
2725		-----		-----	
2728		-----		-----	
2819	In house	4.6790		-----	
2825		-----		-----	
3116		-----		-----	
3117	EN71-3	8.013		-----	
3118	EN71-3	<5		-----	
3146	EN71-3	10.2		-----	
3150	EN71-3	9.45		-----	
3153	EN71-3	<10		-----	
3154	EN71-3	8.29		-----	
3167	EN71-3	nd		-----	
3172	EN71-3	< 50		-----	
3176	EN71-3	5.05		-----	
3182	EN71-3	ND		-----	
3185	EN71-3	<10		-----	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	<10		-----	
3191	EN71-3	8.8945		-----	
3197	EN71-3	<50		-----	
3200	EN71-3	<10.0		-----	
3209	EN71-3	<10.0		-----	
3214	EN71-3	<10		-----	
3216	EN71-3	5.412		-----	
3218	EN71-3	<10		-----	
3220	EN71-3	5.2398		-----	
3225	EN71-3	ND		-----	
3228	EN71-3	7.5		-----	
3233	EN71-3	8.8828		-----	
3237		-----		-----	
3246	EN71-3	n.d		-----	
3248	EN71-3	ND		-----	
8005		-----		-----	

	normality	OK
	n	42
	outliers	0
	mean (n)	6.9646
	st.dev. (n)	1.62881
	R(calc.)	4.5607
	st.dev.(RR prEN71-3:13)	(1.67151)
	R(RR prEN71-3:13)	(4.6802)
Compare		
	R(RR prEN71-3:18)	(0.7979)



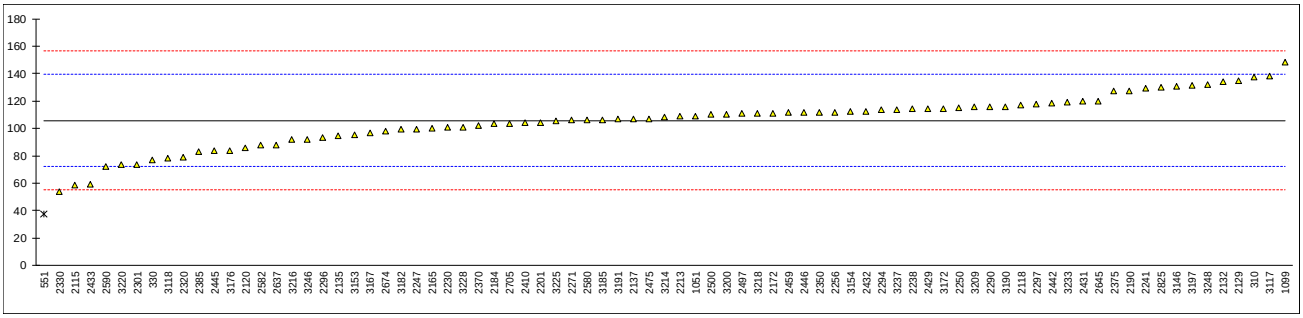


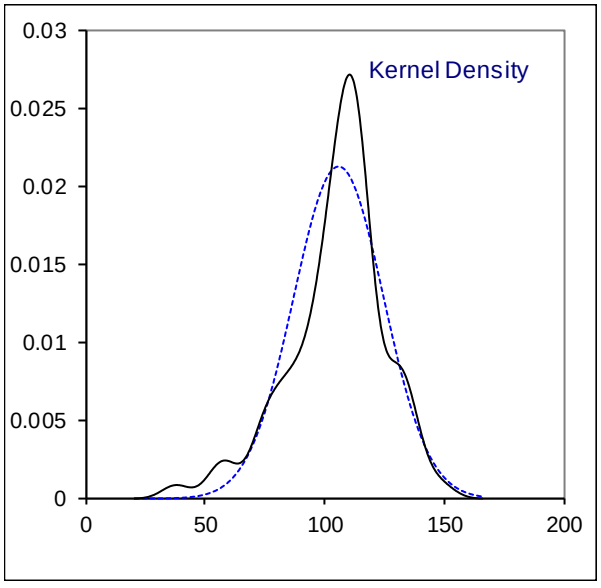
Determination of migration of Strontium as Sr on paper with ink sample #18541; results in mg/kg

lab	method	value	mark	z(targ)	remarks
310	EN71-3	137.7		1.89	
330	EN71-3	76.797		-1.71	
551	EN71-3	37.75	R(0.05)	-4.02	
1051	EN71-3	108.738		0.18	
1099	EN71-3	148.47		2.53	
2115	EN71-3	58.68		-2.78	
2118	EN71-3	117.135		0.67	
2120	EN71-3	86.0		-1.17	
2129		134.9		1.72	
2132	EN71-3	134.25		1.69	
2135		94.46		-0.67	
2137	EN71-3	106.8		0.06	
2165	EN71-3	99.9		-0.34	
2172	EN71-3	111.2		0.32	
2184	EN71-3	103.5		-0.13	
2190	EN71-3	127.4		1.28	
2201	EN71-3	104.4		-0.08	
2213	EN71-3	108.6		0.17	
2230	EN71-3	101		-0.28	
2238	EN71-3	114.11		0.50	
2241	EN71-3	129.204		1.39	
2247	EN71-3	99.3		-0.38	
2250	EN71-3	114.969		0.55	
2256	EN71-3	111.8		0.36	
2271	EN71-3	106		0.02	
2290	EN71-3	115.7		0.59	
2293		-----		-----	
2294	EN71-3	113.400		0.45	
2296	In house	93.3001		-0.73	
2297	EN71-3	117.7		0.71	
2301	EN71-3	73.5000		-1.91	
2320	EN71-3	78.8		-1.59	
2330	EN71-3	54.0086		-3.06	
2350	EN71-3	111.8		0.36	
2370	EN71-3	102		-0.22	
2375	EN71-3	127		1.26	
2385	EN71-3	83.1		-1.34	
2410	EN71-3	104		-0.10	
2429	EN71-3	114.12		0.50	
2431	EN71-3	120.0139		0.84	
2432	EN71-3	112.6531		0.41	
2433		59.39		-2.74	
2442	EN71-3	118.34		0.75	
2445	EN71-3	84.0		-1.28	
2446	EN71-3	111.792055	C	0.36	First reported 111792.055
2459	EN71-3	111.340		0.33	
2475	EN71-3	107.0		0.08	
2495		-----		-----	
2497	EN71-3	110.87		0.30	
2500	EN71-3	110.213		0.27	
2509		-----		-----	
2580	EN71-3	106		0.02	
2582	EN71-3	87.80		-1.06	
2590	EN71-3	72.3558		-1.97	
2637		88		-1.05	
2642		-----		-----	
2645	EN71-3	120.02		0.84	
2674	EN71-3	98.2026		-0.44	
2685		-----		-----	
2705	EN71-3	103.6		-0.13	
2725		-----		-----	
2728		-----		-----	
2819		-----		-----	
2825	EN71-3	130.0		1.43	
3116		-----		-----	
3117	EN71-3	138.163		1.92	
3118	EN71-3	78.604		-1.60	
3146	EN71-3	131		1.49	
3150		-----		-----	
3153	EN71-3	95.4		-0.61	
3154	EN71-3	112.2		0.38	
3167	EN71-3	96.6		-0.54	
3172	EN71-3	114.2		0.50	
3176	EN71-3	84.01		-1.28	
3182	EN71-3	99.223		-0.38	
3185	EN71-3	106.04		0.02	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	116.0		0.61	
3191	EN71-3	106.6403		0.05	
3197	EN71-3	131.3		1.51	
3200	EN71-3	110.28		0.27	
3209	EN71-3	115.53		0.58	
3214	EN71-3	108.4		0.16	
3216	EN71-3	92.043		-0.81	
3218	EN71-3	111		0.31	
3220	EN71-3	73.4466		-1.91	
3225	EN71-3	105.22		-0.03	
3228	EN71-3	101		-0.28	
3233	EN71-3	118.8163		0.77	
3237	EN71-3	113.5		0.46	
3246	EN71-3	92.123		-0.80	
3248	EN71-3	132		1.55	
8005		-----		-----	

	normality	OK
	n	80
	outliers	1
	mean (n)	105.726
	st.dev. (n)	18.7677
	R(calc.)	52.550
	st.dev.(RR prEN71-3:13)	16.9161
	R(RR prEN71-3:13)	47.365
Compare		
	R(RR prEN71-3:18)	30.491





Determination of migration of Other Metals on paper with ink sample #18541; results in mg/kg

lab	Sb	As	B	Cr	Co	Cu	Pb	Hg	Ni
310	0.019	0.085	0.256	0.187	0.18	0.664	0.285	0.037	1.648
330	< 2	< 0.5	< 15	< 0.2	< 2	< 2	< 1	< 0.5	< 2
551	ND	ND	ND	ND	ND	ND	ND	ND	ND
1051	<5	<5	<10	<5	<5	<10	<5	<5	<5
1099	0.05	0.10	0.18	<0.5	<0.05	<0.5	0.15	<0.05	<0.5
2115	-----	-----	-----	-----	-----	0.17	-----	-----	-----
2118	0	0.17	4.12	0.16	0.03	0.46	0.09	0	0.14
2120	< 1,3	0.150	< 1,3	< 0,13	< 1,3	< 2,5	< 0,25	< 0,05	< 1,3
2129	<1	<0,1	<10	<1	<0,1	<10	<1	<0,1	<1
2132	<10	<2.5	<25	<10	<10	<15	<10	<10	<10
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----
2137	-----	-----	-----	-----	-----	-----	-----	-----	-----
2165	<5	<5	<10	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
2172	<5	<5	<5	<5	<5	<5	<5	<5	<5
2184	<5	<5	<10	0.411	<2.5	<2.5	<2.5	<2.5	<2.5
2190	<10	<2	<50	<0.2	<2	<50	<2	<2	<50
2201	<10	<10	<50	<10	<10	<10	<10	<10	<10
2213	<10	<1	<50	<10	<5	<50	<10	<5	<10
2230	<2	<2	<2	<0.15	<2	<2	<2	<2	<2
2238	<10	<10	<50	<10	<10	<10	<10	<10	<10
2241	0.007	0.263	0.417	0.181	0.047	0.382	0.175	0.000	0.214
2247	< 5	< 0.5	< 5	< 5	< 0.5	< 5	< 1	<0.5	< 5
2250	<0,1	<0,1	<1	0.14092	<0,1	<1	0.2895	<0,1	0.13897
2256	<2	<2	<2	<2	<2	<2	<2	<2	<2
2271	-----	-----	-----	-----	-----	-----	-----	-----	-----
2290	<10	<10	<50	<10	<10	<10	<10	<10	<10
2293	0.89	0.22	-----	0.50	-----	-----	1.75	0.00	-----
2294	< 5	< 5	< 5	< 2.5	ND	4.979	ND	ND	< 2.5
2296	<0.63	<0.74	<0.54	<0.10	<0.093	<0.28	<0.42	<0.20	<0.48
2297	<5	<5	<50	<5	<5	<50	<5	<5	<5
2301	0	0	0	0	0	15.6200	0	0	3.4600
2320	0.021	0.028	18.7	0.087	0.116	0.106	25.5	-----	0.240
2330	ND	ND	ND	ND	ND	ND	ND	ND	ND
2350	<10	<10	<50	<0.15	<10	<50	<10	<10	<10
2370	<10	<10	<50	<0.15	<10	<50	<10	<10	<10
2375	-----	-----	-----	0.25	-----	-----	-----	-----	-----
2385	<1	<1	<5	<1	<1	<1	<1	<0,1	<1
2410	<10	<10	<50	<10	<10	<10	<10	<10	<10
2429	<10	<10	<50	<10	<10	<10	<10	<10	<10
2431	-----	-----	-----	-----	-----	-----	-----	-----	-----
2432	-----	-----	-----	-----	-----	-----	-----	-----	-----
2433	-----	-----	-----	-----	-----	-----	-----	-----	-----
2442	-----	-----	-----	-----	-----	-----	-----	-----	-----
2445	0.0189	0.427	0.264	0.0243	0.0211	0.257	<0.5	<0.5	0.115
2446	0.165651	-----	16.952619	0.243288	0.041783	1.045464	0.376966	-----	0.135007
2459	ND	ND	ND	ND	ND	17.080	ND	ND	ND
2475	-----	-----	-----	-----	-----	-----	-----	-----	-----
2495	-----	-----	-----	-----	-----	-----	-----	-----	-----
2497	-----	-----	-----	-----	-----	-----	-----	-----	-----
2500	ND	ND	ND	ND	ND	ND	ND	ND	ND
2509	-----	-----	-----	-----	-----	-----	-----	-----	-----
2580	-----	-----	-----	0.8	-----	-----	-----	-----	-----
2582	-----	0.08	-----	-----	-----	-----	0.84	-----	0.10
2590	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	6.5685
2637	<0.1	<1	<5	<1	0.1	<1	<0.5	<0.1	<1
2642	<5	<5	-----	<5	-----	-----	<5	<10	-----
2645	-----	-----	-----	-----	-----	-----	-----	-----	-----
2674	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2685	-----	-----	-----	0	8.89	-----	12.75	-----	7.18
2705	0.0165	0.32	0.22	0.59	0.0315	0.00	0.00	0.062	0.165
2725	-----	-----	<1,67	-----	-----	<1,67	-----	-----	0.49250
2728	10.14	ND	-----	ND	-----	-----	ND	ND	-----
2819	0.1103	<0.05	-----	<5	<2.5	-----	<10	<0.05	<3
2825	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----
3117	0	0	0	0	0	0	0	0	0
3118	<5	<5	<50	<5	<5	<5	<5	<5	<5
3146	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3150	-----	-----	-----	-----	-----	2.29	-----	-----	-----
3153	<10	<10	<50	<10	<10	<10	<10	<10	<10
3154	-----	-----	-----	-----	-----	21.60	-----	-----	-----
3167	nd	nd	nd	nd	nd	nd	nd	nd	nd
3172	< 10	< 5	< 50	< 10	< 10	< 50	< 10	< 10	< 10
3176	-----	-----	-----	-----	-----	-----	-----	-----	-----
3182	ND	ND	ND	ND	ND	ND	7.902	ND	ND
3185	<10	<10	<50	<10	<10	<10	<10	<10	<10

lab	Sb	As	B	Cr	Co	Cu	Pb	Hg	Ni
3190	<10	<10	<50	<10	<10	<10	<10	<10	<10
3191	-----	-----	-----	0.1908	-----	-----	-----	-----	-----
3197	<10	<0,5	<50	0.47	<1	<10	<1	<1	<10
3200	<5.0	<5.0	<10.0	<1.0	<5.0	<10.0	<2.0	<1.0	<10.0
3209	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
3214	<10	<10	<50	<5	<10	<10	<10	<10	<10
3216	nd	0.327	0.139	0.382	0.044	0.205	0.138	0.190	0.557
3218	<10	<10	<50	<1	<10	<10	<1	<10	<10
3220	ND	ND	ND	ND	ND	0.8898	ND	ND	ND
3225	ND	ND	ND	ND	ND	ND	ND	ND	ND
3228	<5	<5	<10	<1	<2.5	<2.5	<2.5	<2.5	<2.5
3233	< 5	< 0.5	< 5	0.2075	< 0.5	< 5	< 0.5	< 0.5	< 5
3237	-----	-----	-----	0.33	-----	-----	-----	-----	-----
3246	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d
3248	ND	ND	ND	ND	ND	ND	ND	ND	ND
8005	-----	-----	-----	-----	-----	-----	-----	-----	-----

Determination of migration of Other Metals on paper with ink sample #18541; results in mg/kg

lab	Se	Sn	Zn
310	0.028	0.037	4.111
330	< 2	< 0.2	< 15
551	ND	ND	ND
1051	<5	<2.5	<10
1099	<0.5	<5.0	<5.0
2115	-----	-----	1.06
2118	0	0	5.175
2120	< 1,3	< 1,3	< 2,5
2129	<1	<3	<10
2132	<10	<10	<50
2135	-----	-----	-----
2137	-----	-----	-----
2165	<10	<1	<10
2172	<5	<5	<5
2184	<10	<1	<10
2190	<50	<4	<50
2201	<10	<10	<100
2213	<10	<50	<50
2230	<2	<2	<2
2238	<10	<2.5	<100
2241	0.016	0.005	2.484
2247	< 5	< 5	< 5
2250	<1	<0,1	3.3268
2256	<2	<2	4.019
2271	-----	-----	-----
2290	<10	<10	<100
2293	6.89	-----	-----
2294	< 5	< 5	94.525
2296	<1.0	<1.4	<1.3
2297	<5	<5	<50
2301	0	0	11.2100
2320	0.062	0.048	0.393
2330	ND	ND	ND
2350	<10	<4.9	<50
2370	<10	<4.9	<50
2375	-----	-----	-----
2385	1.17	<1	4.16
2410	<10	<10	<100
2429	<10	<10	<100
2431	-----	-----	-----
2432	-----	-----	12.2264
2433	-----	-----	-----
2442	-----	-----	-----
2445	<0.5	0.130	0.712
2446	-----	0.075030	5.036723
2459	ND	ND	ND
2475	-----	-----	-----
2495	-----	-----	-----
2497	-----	-----	2.38
2500	ND	ND	ND
2509	-----	-----	-----
2580	-----	-----	4.9
2582	-----	0.71	5.93
2590	< L.O.Q.	< L.O.Q.	1.1755
2637	3	<1	1
2642	<5	-----	-----
2645	-----	-----	-----
2674	n.d.	n.d.	n.d.
2685	-----	-----	-----
2705	0.06	0.018	3.45
2725	<0,133	<0,83	-----
2728	ND	-----	-----
2819	<0.1	-----	<1
2825	-----	-----	-----
3116	-----	-----	-----
3117	0	0	22.875
3118	<5	<5	<5
3146	n.d.	n.d.	n.d.
3150	-----	-----	8.81
3153	<10	<10	<100
3154	-----	-----	-----
3167	nd	nd	nd
3172	< 10	< 50	< 50
3176	-----	-----	-----
3182	ND	ND	<5
3185	<10	<10	<100

lab	Se	Sn	Zn
3190	<10	<10	<100
3191	-----	-----	10.7509
3197	<1	<10	<50
3200	<10.0	<10.0	<10.0
3209	<10.0	<10.0	<10.0
3214	<10	<10	<100
3216	0.050	nd	1.275
3218	<10	<3.9	<100
3220	ND	ND	1.2771
3225	ND	ND	ND
3228	<10	<1	<10
3233	< 5	< 0.5	< 5
3237	-----	-----	-----
3246	n.d	n.d	n.d
3248	ND	ND	ND
8005	-----	-----	-----

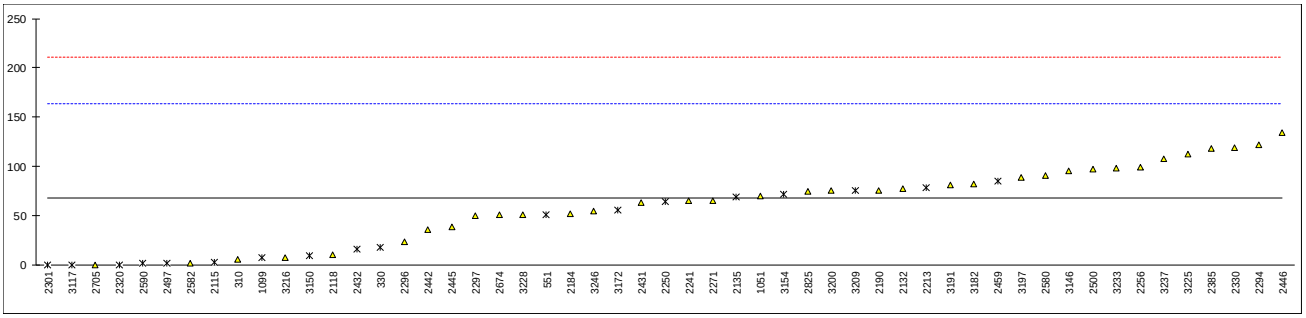
Determination of migration of Aluminium as Al on dried paint sample #18542; results in mg/kg

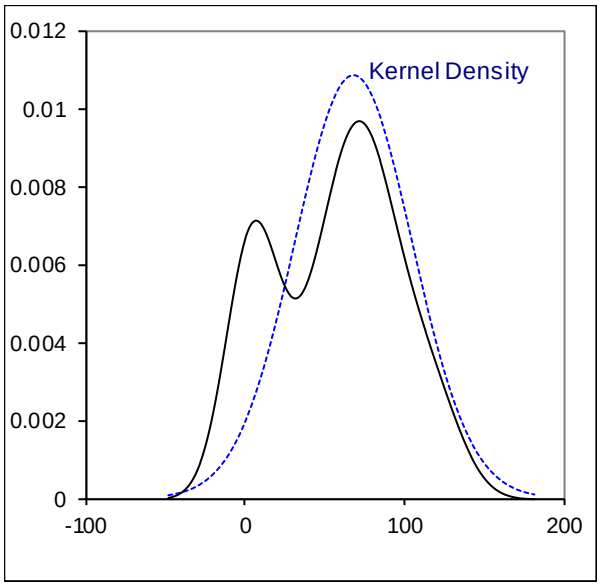
lab	method	value	mark	z(targ)	remarks
310	EN71-3	6.299		-1.32	
330	EN71-3	18.46	ex	-1.06	
551	EN71-3	51.21	ex	-0.37	
1051	EN71-3	69.815		0.02	
1099	EN71-3	7.38	ex	-1.29	
2115	EN71-3	2.71	ex	-1.39	
2118	EN71-3	10.265		-1.23	
2120	EN71-3	< 2,5		-----	
2129		<100		-----	
2132	EN71-3	78.09		0.20	
2135		69.59	ex	0.02	
2137		-----		-----	
2165	EN71-3	<50		-----	
2172	EN71-3	<5		-----	
2184	EN71-3	52.0		-0.35	
2190	EN71-3	75.9		0.15	
2201	EN71-3	<300		-----	
2213	EN71-3	79	ex	0.22	
2230	EN71-3	<2		-----	
2238	EN71-3	<300		-----	
2241	EN71-3	65.031		-0.08	
2247	EN71-3	<5		-----	
2250	EN71-3	64.5694	ex	-0.09	
2256	EN71-3	99.48		0.65	
2271	EN71-3	65.7		-0.06	
2290	EN71-3	<100		-----	
2293		-----		-----	
2294	EN71-3	122.219		1.13	
2296	In house	24.1380		-0.94	
2297	EN71-3	50.32		-0.39	
2301	EN71-3	0	ex	-1.45	
2320	EN71-3	0.510	ex	-1.44	
2330	EN71-3	119.3114		1.07	
2350	EN71-3	<50		-----	
2370	EN71-3	<50		-----	
2375		-----		-----	
2385	EN71-3	118		1.04	
2410	EN71-3	<100		-----	
2429	EN71-3	<300		-----	
2431	EN71-3	63.2810	C	-0.11	First reported 166.7391
2432	EN71-3	16.2436	ex	-1.11	
2433		-----		-----	
2442		36.52		-0.68	
2445	EN71-3	38.7		-0.63	
2446	EN71-3	134.663831	C	1.39	First reported 134663.831
2459	EN71-3	85.190	ex	0.35	
2475		-----		-----	
2495		-----		-----	
2497	EN71-3	2.02	ex	-1.41	
2500	EN71-3	97.134		0.60	
2509		-----		-----	
2580	EN71-3	91		0.47	
2582	EN71-3	2.46		-1.40	
2590	EN71-3	1.8898	ex	-1.41	
2637		<50		-----	
2642		-----		-----	
2645		-----		-----	
2674	EN71-3	51.0		-0.37	
2685		-----		-----	
2705	EN71-3	0.31		-1.44	
2725		-----		-----	
2728		-----		-----	
2819		-----		-----	
2825	EN71-3	74.61		0.13	
3116		-----		-----	
3117	EN71-3	0	ex	-1.45	
3118	EN71-3	<50		-----	
3146	EN71-3	95.4		0.57	
3150	EN71-3	9.2	C,ex	-1.26	First reported 183
3153	EN71-3	<300		-----	
3154	EN71-3	72.18	ex	0.07	
3167	EN71-3	nd		-----	
3172	EN71-3	55.8	ex	-0.27	
3176		-----		-----	
3182	EN71-3	82.569		0.29	
3185	EN71-3	<300		-----	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	<100		-----	
3191	EN71-3	81.3833		0.27	
3197	EN71-3	88.5		0.42	
3200	EN71-3	75.29		0.14	
3209	EN71-3	75.53	ex	0.15	
3214	EN71-3	<300		-----	
3216	EN71-3	7.857		-1.28	
3218	EN71-3	<300		-----	
3220	EN71-3	ND		-----	
3225	EN71-3	112.78		0.93	
3228	EN71-3	51.0		-0.37	
3233	EN71-3	98.6416		0.63	
3237	EN71-3	107.93		0.83	
3246	EN71-3	54.516		-0.30	
3248	EN71-3	ND		-----	
8005		-----		-----	

	normality	OK
	n	35
	outliers	0 (+18 excl)
	mean (n)	68.632
	st.dev. (n)	36.7863
	R(calc.)	103.002
	st.dev.(RR prEN71-3:13)	47.3560
	R(RR prEN71-3:13)	132.597
Compare		
	R(RR prEN71-3:18)	13.452

See for excluded test results, the discussion in §4.1 and 5





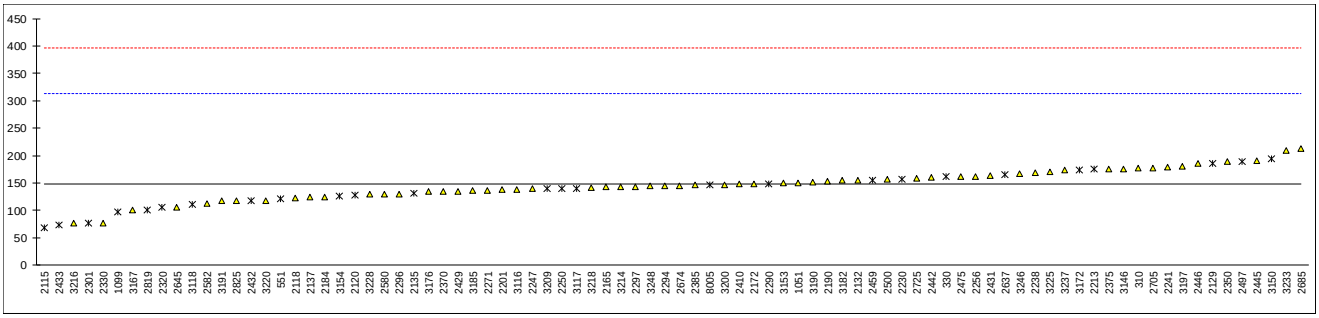
Determination of migration of Cobalt as Co on dried paint sample #18542; results in mg/kg

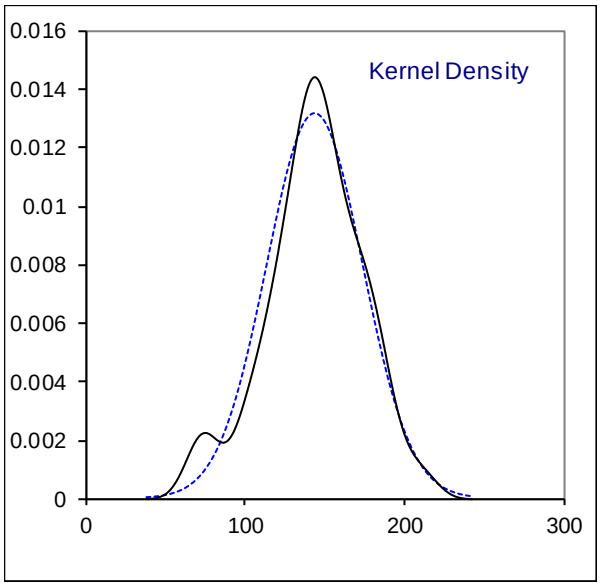
lab	method	value	mark	z(targ)	remarks
310	EN71-3	176.7		0.35	
330	EN71-3	161.89	ex	0.17	
551	EN71-3	120.69	ex	-0.33	
1051	EN71-3	150.222		0.03	
1099	EN71-3	97.69	ex	-0.61	
2115	EN71-3	69.02	ex	-0.95	
2118	EN71-3	122.725		-0.31	
2120	EN71-3	127.4	ex	-0.25	
2129		185.4	ex	0.45	
2132	EN71-3	155.18		0.09	
2135		130.97	ex	-0.21	
2137	EN71-3	124		-0.29	
2165	EN71-3	142.5		-0.07	
2172	EN71-3	148.3		0.00	
2184	EN71-3	124.7		-0.28	
2190	EN71-3	153.5		0.07	
2201	EN71-3	137.7		-0.13	
2213	EN71-3	175.6	ex	0.33	
2230	EN71-3	156	ex	0.10	
2238	EN71-3	167.87		0.24	
2241	EN71-3	178.350		0.37	
2247	EN71-3	139.5		-0.10	
2250	EN71-3	140.0655	ex	-0.10	
2256	EN71-3	162.3		0.17	
2271	EN71-3	137		-0.13	
2290	EN71-3	148.3	ex	0.00	
2293		-----		-----	
2294	EN71-3	145.303		-0.03	
2296	In house	130.3142		-0.21	
2297	EN71-3	143.6		-0.05	
2301	EN71-3	76.4400	ex	-0.86	
2320	EN71-3	105.5	ex	-0.51	
2330	EN71-3	76.7465		-0.86	
2350	EN71-3	188.9		0.49	
2370	EN71-3	135		-0.16	
2375	EN71-3	176		0.34	
2385	EN71-3	146		-0.02	
2410	EN71-3	148		0.00	
2429	EN71-3	135.24		-0.15	
2431	EN71-3	163.6096		0.19	
2432	EN71-3	117.8817	ex	-0.36	
2433		72.78	ex	-0.91	
2442		160.65		0.15	
2445	EN71-3	191		0.52	
2446	EN71-3	185.115637	C	0.45	First reported 185115.637
2459	EN71-3	155.320	ex	0.09	
2475	EN71-3	162.1		0.17	
2495		-----		-----	
2497	EN71-3	189.33	ex	0.50	
2500	EN71-3	155.912		0.09	
2509		-----		-----	
2580	EN71-3	129		-0.23	
2582	EN71-3	112.03		-0.43	
2590		-----		-----	
2637		165	ex	0.20	
2642		-----		-----	
2645	EN71-3	106.45		-0.50	
2674	EN71-3	145.5399		-0.03	
2685	EN71-3	213.02		0.78	
2705	EN71-3	177.47		0.35	
2725	EN71-3	158.6539		0.13	
2728		-----		-----	
2819	In house	100.7025	ex	-0.57	
2825	EN71-3	117.8		-0.37	
3116	EN71-3	138.73		-0.11	
3117	EN71-3	140.457	ex	-0.09	
3118	EN71-3	110.333	ex	-0.46	
3146	EN71-3	176		0.34	
3150	EN71-3	194	ex	0.55	
3153	EN71-3	150.1		0.02	
3154	EN71-3	126.2	ex	-0.26	
3167	EN71-3	100.6		-0.57	
3172	EN71-3	174.5	ex	0.32	
3176	EN71-3	134.72		-0.16	
3182	EN71-3	154.651		0.08	
3185	EN71-3	135.72		-0.15	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	151.2		0.04	
3191	EN71-3	117.7497		-0.37	
3197	EN71-3	180.9		0.40	
3200	EN71-3	147.37		-0.01	
3209	EN71-3	139.52	ex	-0.10	
3214	EN71-3	143.5		-0.06	
3216	EN71-3	76.345		-0.86	
3218	EN71-3	141		-0.09	
3220	EN71-3	118.3069		-0.36	
3225	EN71-3	169.64		0.26	
3228	EN71-3	128.8		-0.23	
3233	EN71-3	209.1434		0.74	
3237	EN71-3	173.1		0.30	
3246	EN71-3	167.355		0.23	
3248	EN71-3	145		-0.04	
8005		146.19	ex	-0.02	

	normality	OK
	n	60
	outliers	0 (+26excl)
	mean (n)	148.066
	st.dev. (n)	27.0914
	R(calc.)	75.856
	st.dev.(RR prEN71-3:13)	82.9167
	R(RR prEN71-3:13)	232.167
Compare		
	R(RR prEN71-3:18)	44.775

See for excluded test results, the discussion in §4.1 and 5





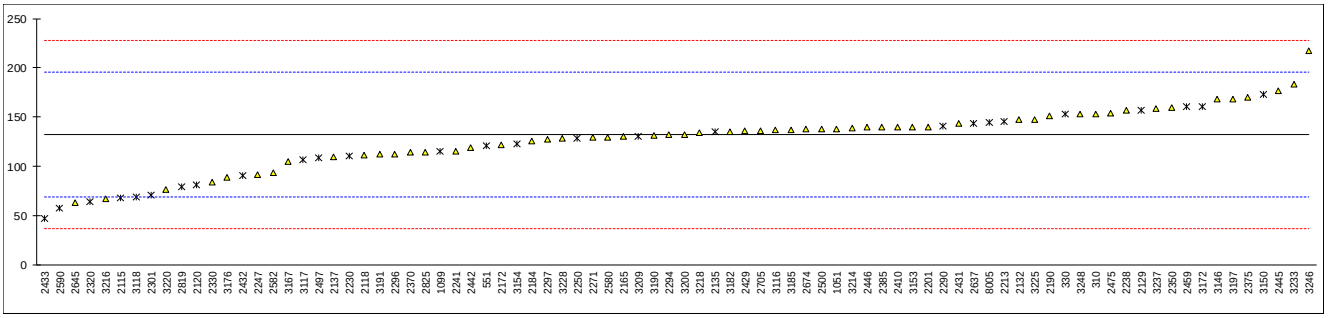
Determination of migration of Manganese as Mn on dried paint sample #18542; results in mg/kg

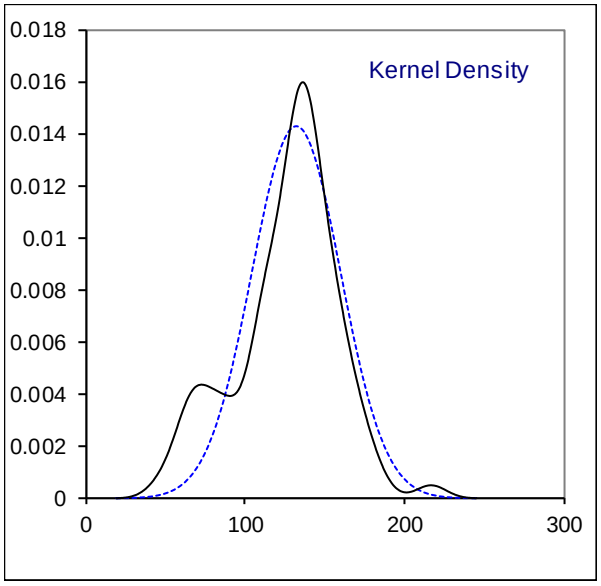
lab	method	value	mark	z(targ)	remarks
310	EN71-3	153.3		0.65	
330	EN71-3	152.87	ex	0.64	
551	EN71-3	121.45	ex	-0.35	
1051	EN71-3	138.288		0.18	
1099	EN71-3	115.00	ex	-0.55	
2115	EN71-3	68.04	ex	-2.03	
2118	EN71-3	111.535		-0.66	
2120	EN71-3	81.2	ex	-1.61	
2129		156.8	ex	0.76	
2132	EN71-3	147.69		0.48	
2135		134.9	ex	0.08	
2137	EN71-3	110		-0.71	
2165	EN71-3	130.1		-0.07	
2172	EN71-3	121.8		-0.34	
2184	EN71-3	126.2		-0.20	
2190	EN71-3	151.3		0.59	
2201	EN71-3	140.3		0.25	
2213	EN71-3	145.8	ex	0.42	
2230	EN71-3	111	ex	-0.68	
2238	EN71-3	156.60		0.76	
2241	EN71-3	115.847		-0.52	
2247	EN71-3	91.7		-1.28	
2250	EN71-3	128.746	ex	-0.12	
2256	EN71-3	<2		-----	False negative?
2271	EN71-3	130		-0.08	
2290	EN71-3	140.6	ex	0.26	
2293		-----		-----	
2294	EN71-3	132.112		-0.01	
2296	In house	112.3710		-0.63	
2297	EN71-3	127.7		-0.15	
2301	EN71-3	70.6700	ex	-1.94	
2320	EN71-3	64.8	ex	-2.13	
2330	EN71-3	84.6806		-1.50	
2350	EN71-3	159.5		0.85	
2370	EN71-3	114		-0.58	
2375	EN71-3	170		1.18	
2385	EN71-3	140		0.24	
2410	EN71-3	140		0.24	
2429	EN71-3	136.33		0.12	
2431	EN71-3	143.5703		0.35	
2432	EN71-3	91.0813	ex	-1.30	
2433		47.84	ex	-2.66	
2442		119.60		-0.41	
2445	EN71-3	177		1.40	
2446	EN71-3	139.593508	C	0.22	First reported 139593.508
2459	EN71-3	160.415	ex	0.88	
2475	EN71-3	154.2		0.68	
2495		-----		-----	
2497	EN71-3	108.72	ex	-0.75	
2500	EN71-3	138.233		0.18	
2509		-----		-----	
2580	EN71-3	130		-0.08	
2582	EN71-3	94.04		-1.21	
2590	EN71-3	58.1731	ex	-2.34	
2637		144	ex	0.36	
2642		-----		-----	
2645	EN71-3	63.45		-2.17	
2674	EN71-3	137.7342		0.17	
2685		-----		-----	
2705	EN71-3	136.6		0.13	
2725		-----		-----	
2728		-----		-----	
2819	In house	79.2879	ex	-1.67	
2825	EN71-3	114.4		-0.57	
3116	EN71-3	137.1		0.15	
3117	EN71-3	107.028	ex	-0.80	
3118	EN71-3	68.884	ex	-2.00	
3146	EN71-3	168		1.12	
3150	EN71-3	173	ex	1.27	
3153	EN71-3	140.2		0.24	
3154	EN71-3	123.2	ex	-0.29	
3167	EN71-3	105.1		-0.86	
3172	EN71-3	160.6	ex	0.88	
3176	EN71-3	88.58		-1.38	
3182	EN71-3	135.443		0.09	
3185	EN71-3	137.21		0.15	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	131.8		-0.02	
3191	EN71-3	112.2398		-0.64	
3197	EN71-3	168.2		1.12	
3200	EN71-3	132.17		-0.01	
3209	EN71-3	130.52	ex	-0.06	
3214	EN71-3	139.0		0.20	
3216	EN71-3	67.113		-2.06	
3218	EN71-3	134		0.05	
3220	EN71-3	77.0297		-1.74	
3225	EN71-3	147.98		0.49	
3228	EN71-3	128.6		-0.12	
3233	EN71-3	183.0680		1.59	
3237	EN71-3	158.6		0.82	
3246	EN71-3	217.333		2.67	
3248	EN71-3	153		0.65	
8005		144.28	ex	0.37	

	normality	suspect
	n	57
	outliers	0 (+27excl)
	mean (n)	132.483
	st.dev. (n)	27.9534
	R(calc.)	78.269
	st.dev.(RR prEN71-3:13)	31.7960
	R(RR prEN71-3:13)	89.029
Compare		
	R(RR prEN71-3:18)	29.676

See for excluded test results, the discussion in §4.1 and 5





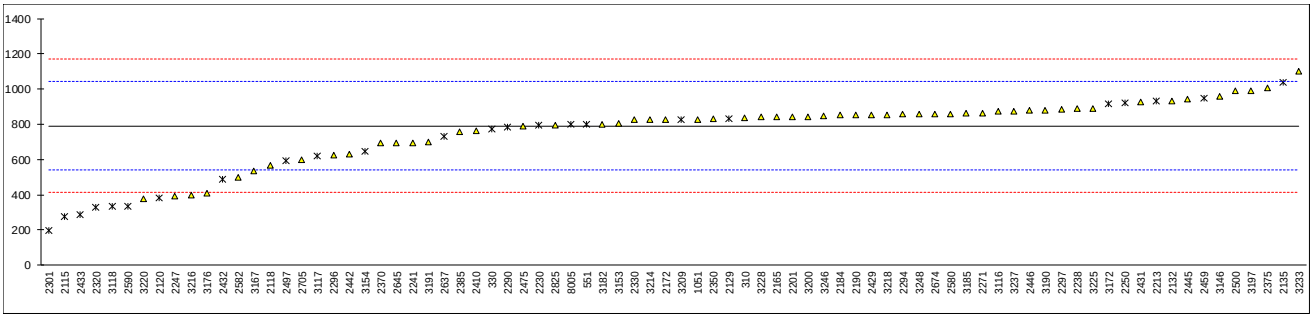
Determination of migration of Strontium as Sr on dried paint sample #18542; results in mg/kg

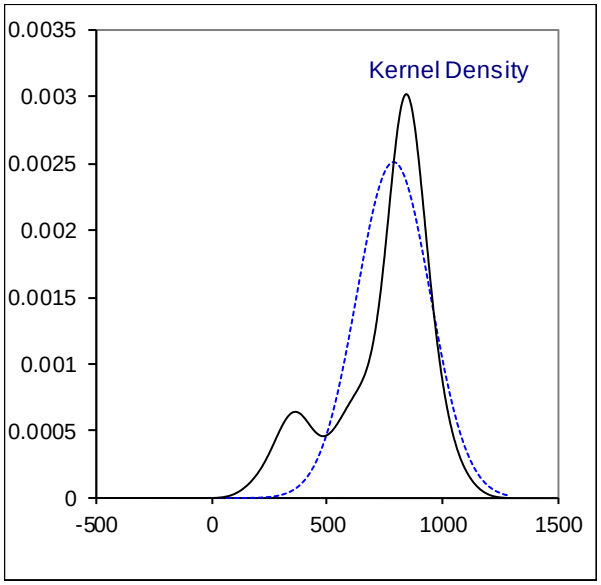
lab	method	value	mark	z(targ)	remarks
310	EN71-3	838.9		0.38	
330	EN71-3	773.92	ex	-0.14	
551	EN71-3	799	ex	0.06	
1051	EN71-3	828.627		0.30	
1099	EN71-3	>500		-----	
2115	EN71-3	275.73	ex	-4.07	
2118	EN71-3	567.49		-1.77	
2120	EN71-3	379.5	ex	-3.25	
2129		833	ex	0.33	
2132	EN71-3	933.62		1.13	
2135		1037.7	ex	1.95	
2137		-----		-----	
2165	EN71-3	841.0		0.39	
2172	EN71-3	825.3		0.27	
2184	EN71-3	850.8		0.47	
2190	EN71-3	853.0		0.49	
2201	EN71-3	843.5		0.41	
2213	EN71-3	929.6	ex	1.09	
2230	EN71-3	796	ex	0.04	
2238	EN71-3	887.21		0.76	
2241	EN71-3	695.725		-0.75	
2247	EN71-3	390		-3.17	
2250	EN71-3	923.009	ex	1.04	
2256	EN71-3	<2		-----	False negative?
2271	EN71-3	865		0.58	
2290	EN71-3	782.7	ex	-0.07	
2293		-----		-----	
2294	EN71-3	855.430		0.51	
2296	In house	626.9156		-1.30	
2297	EN71-3	885.3		0.74	
2301	EN71-3	194.7400	ex	-4.71	
2320	EN71-3	331.2	ex	-3.63	
2330	EN71-3	823.8523		0.26	
2350	EN71-3	830.7		0.31	
2370	EN71-3	694		-0.77	
2375	EN71-3	1005		1.69	
2385	EN71-3	757		-0.27	
2410	EN71-3	762		-0.23	
2429	EN71-3	853.79		0.50	
2431	EN71-3	929.1718		1.09	
2432	EN71-3	487.7731	ex	-2.40	
2433		286.31	ex	-3.99	
2442		631.73		-1.26	
2445	EN71-3	941		1.18	
2446	EN71-3	876.985967	C	0.68	First reported 876985.967
2459	EN71-3	946.140	ex	1.23	
2475	EN71-3	787.7		-0.03	
2495		-----		-----	
2497	EN71-3	591.47	ex	-1.58	
2500	EN71-3	990.923		1.58	
2509		-----		-----	
2580	EN71-3	858		0.53	
2582	EN71-3	496.23		-2.33	
2590	EN71-3	336.6332	ex	-3.59	
2637		730	ex	-0.48	
2642		-----		-----	
2645	EN71-3	694.60		-0.76	
2674	EN71-3	856.3292		0.52	
2685		-----		-----	
2705	EN71-3	600.4		-1.51	
2725		-----		-----	
2728		-----		-----	
2819		-----		-----	
2825	EN71-3	796.4		0.04	
3116	EN71-3	873.94		0.66	
3117	EN71-3	617.599	ex	-1.37	
3118	EN71-3	334.629	ex	-3.61	
3146	EN71-3	958		1.32	
3150		-----		-----	
3153	EN71-3	802.9		0.09	
3154	EN71-3	647.9	ex	-1.13	
3167	EN71-3	535.6		-2.02	
3172	EN71-3	917.9	ex	1.00	
3176	EN71-3	410.05		-3.01	
3182	EN71-3	799.013		0.06	
3185	EN71-3	862.50		0.56	

lab	method	value	mark	z(targ)	remarks
3190	EN71-3	880.8		0.71	
3191	EN71-3	699.7541		-0.72	
3197	EN71-3	992.7		1.59	
3200	EN71-3	843.78		0.42	
3209	EN71-3	828.53	ex	0.30	
3214	EN71-3	824.0		0.26	
3216	EN71-3	396.095		-3.12	
3218	EN71-3	854		0.50	
3220	EN71-3	379.1386		-3.25	
3225	EN71-3	892.00		0.80	
3228	EN71-3	840.5		0.39	
3233	EN71-3	1099.6065		2.44	
3237	EN71-3	874.8		0.66	
3246	EN71-3	848.712		0.46	
3248	EN71-3	856		0.51	
8005		797.75	ex	0.05	

	normality	suspect
	n	56
	outliers	0 (+24 excl)
	mean (n)	791.027
	st.dev. (n)	159.2750
	R(calc.)	445.970
	st.dev.(RR prEN71-3:13)	126.5643
	R(RR prEN71-3:13)	354.380
Compare		
	R(RR prEN71-3:18)	228.132

See for excluded test results, the discussion in §4.1 and 5





Determination of migration of Other Metals on dried paint sample #18542; results in mg/kg

lab	Sb	As	Ba	B	Cd	Cr	Cu	Pb	Hg
310	0.04	0.115	4.086	0.253	0.231	0.069	0.289	0.041	0
330	< 2	< 0.5	< 15	< 15	0.250	< 0.2	< 2	< 1	< 0.5
551	ND	ND	ND	ND	ND	ND	ND	ND	ND
1051	<5	<5	<10	<10	<2	<5	<10	<5	<5
1099	0.05	0.17	3.82	0.51	0.26	<0.5	<0.5	<0.05	<0.05
2115	-----	-----	1.06	-----	-----	-----	-----	-----	-----
2118	0	0.18	2.43	7.02	0.19	0.055	0.215	0	0
2120	< 1,3	0.135	1.90	< 1,3	< 0,13	< 0,13	< 2,5	< 0,25	< 0,05
2129	<1	<0,5	<10	<10	<0,5	<1	<10	<1	<0,1
2132	<10	<2.5	<25	<25	<1	<10	<15	<10	<10
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----
2137	-----	-----	-----	-----	-----	-----	-----	-----	-----
2165	<5	<5	<2.5	<10	<1	<2.5	<2.5	<2.5	<2.5
2172	<5	<5	<5	<5	<5	<5	<5	<5	<5
2184	<5	<5	3.12	<10	<1	0.207	<2.5	<2.5	<2.5
2190	<10	<0.5	<50	<50	<0.5	<5	<50	<1	<1
2201	<10	<10	<10	<50	<5	<10	<10	<10	<10
2213	<10	<1	<50	<50	0.3	<10	<50	<0.5	<5
2230	<2	<2	<2	<2	<2	<0.15	<2	<2	<2
2238	<10	<10	<10	<50	<5	<10	<10	<10	<10
2241	0.003	1.325	2.632	0.549	0.156	0.160	0.215	0.279	0.000
2247	< 5	< 0.5	< 5	< 5	< 0.5	< 5	< 5	< 1	< 0.5
2250	<0,1	<0,1	3.8306	<1	0.26173	0.1854	<1	0.68763	<0,1
2256	<2	<2	<2	<2	<2	<2	<2	<2	134.8
2271	-----	-----	-----	-----	-----	-----	-----	-----	-----
2290	<10	<1	<10	<50	<0.5	<5	<10	<1	<1
2293	0.00	0.00	3.61	-----	0.00	0.00	-----	0.00	1.04
2294	< 5	ND	3.789	< 5	< 2.5	< 2.5	< 2.5	< 5	6.759
2296	<0.63	<0.74	2.8059	<0.54	<0.057	<0.10	<0.28	<0.42	<0.20
2297	<5	<5	<50	<50	<5	<5	<50	<5	<5
2301	0	0	15.1400	14.7900	0	0	0	0	0
2320	0.024	0.253	1.33	20.3	0.035	0.037	0.140	0.020	-----
2330	ND	ND	ND	ND	ND	ND	ND	ND	11.3772
2350	<1	2.914	<50	<50	<0.3	0.07816	<50	<0.5	<0.5
2370	<10	<10	<50	<50	<5	<0.15	<50	<10	<10
2375	-----	-----	-----	-----	0.3	0.19	-----	-----	-----
2385	<1	<1	2.95	<5	0.25	<1	<1	<1	<0,1
2410	<10	<10	<10	<50	<5	<10	<10	<10	<10
2429	<10	<10	<10	<50	<5	<10	<10	<10	<10
2431	-----	-----	-----	-----	-----	-----	-----	-----	-----
2432	-----	-----	1.8240	-----	-----	-----	-----	-----	-----
2433	-----	-----	44.45	-----	-----	-----	-----	-----	-----
2442	-----	-----	-----	-----	-----	-----	-----	-----	-----
2445	0.0291	4.91	4.78	1.31	0.300	0.147	0.367	<0.5	<0.5
2446	0.891567	-----	6.274252	17.032861	0.327587	0.319030	0.361587	0.826134	-----
2459	ND	ND	ND	ND	ND	ND	19.825	ND	ND
2475	-----	-----	-----	-----	-----	-----	-----	-----	-----
2495	-----	-----	-----	-----	-----	-----	-----	-----	-----
2497	-----	-----	1.59	-----	-----	-----	-----	-----	-----
2500	ND	ND	ND	ND	ND	ND	ND	ND	ND
2509	-----	-----	12	-----	-----	-----	-----	-----	-----
2580	-----	-----	3.2	-----	-----	-----	-----	-----	-----
2582	-----	0.08	2.10	-----	0.12	-----	-----	-----	-----
2590	< L.O.Q.	< L.O.Q.	1.5925	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.	< L.O.Q.
2637	<0.1	<1	3.8	<5	0.3	<1	<1	<0.5	<0.1
2642	<5	<5	<5	-----	<5	<5	-----	<5	<10
2645	-----	-----	-----	-----	-----	-----	-----	-----	-----
2674	n.d.	n.d.	3.1050	n.d.	n.d.	0.1789	n.d.	n.d.	n.d.
2685	-----	-----	-----	-----	0.81	0.72	-----	13.99	-----
2705	0.0075	0.33	2.22	1.039	0.18	0.149	0.00	0.00	0.071
2725	-----	-----	-----	2.2398	-----	-----	<1,67	-----	-----
2728	ND	ND	ND	-----	ND	ND	-----	ND	ND
2819	-----	0.0697	<25	-----	<1	<5	-----	<10	<0.05
2825	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----
3117	0	0	0	0	0	0	0	0	0
3118	<5	<5	<5	<5	<5	<5	<5	<5	<5
3146	n.d.	n.d.	n.d.	n.d.	0.360	n.d.	n.d.	n.d.	n.d.
3150	-----	-----	6.18	-----	-----	-----	-----	-----	-----
3153	<10	<10	<10	<50	<5	<10	<10	<10	<10
3154	-----	-----	2.82	-----	-----	1.21	14.93	1.30	-----
3167	nd	nd	nd	nd	nd	nd	nd	nd	nd
3172	< 10	< 1	< 50	< 50	0.34	< 10	< 50	< 0.3	< 5
3176	-----	-----	-----	-----	-----	-----	-----	-----	-----
3182	ND	ND	<5	ND	ND	ND	ND	ND	ND
3185	<10	<10	<10	<50	<5	<10	<10	<10	<10

lab	Sb	As	Ba	B	Cd	Cr	Cu	Pb	Hg
3190	<10	<1.0	<10	<50	<0.5	<5.0	<10	<1.0	<1.0
3191	-----	-----	3.4282	-----	0.2733	0.2922	-----	-----	-----
3197	<10	<0,5	<50	<50	0.30	0.22	<10	<1	<1
3200	<5.0	<5.0	<10.0	<10.0	<1.0	<1.0	<10.0	<2.0	<1.0
3209	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
3214	<10	<10	<10	<50	<5	<5	<10	<10	<10
3216	nd	1.283	1.837	0.408	0.083	0.270	nd	nd	nd
3218	<10	<10	<10	<50	<0.5	<1	<10	<1	<10
3220	ND	ND	1.2183	ND	ND	ND	ND	ND	ND
3225	ND	ND	ND	ND	ND	ND	ND	ND	ND
3228	<5	<5	3.2	<10	<1	<1	<2.5	<2.5	<2.5
3233	< 5	1.0769	5.0876	< 5	< 0.5	0.1715	< 5	< 0.5	< 0.5
3237	-----	-----	-----	-----	0.24	0.21	-----	-----	-----
3246	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3248	ND	ND	ND	ND	ND	ND	ND	ND	ND
8005	-----	-----	-----	-----	-----	-----	-----	-----	-----

Determination of migration of Other Metals on dried paint sample #18542; results in mg/kg

lab	Ni	Se	Sn	Zn
310	3.914	0.02	0.049	3.008
330	< 2	< 2	< 0.2	< 15
551	ND	ND	ND	ND
1051	<5	<5	<2.5	<10
1099	<0.5	<0.5	<5.0	<5.0
2115	-----	-----	-----	0.54
2118	0.255	0	0	1.595
2120	< 1,3	< 1,3	< 1,3	< 2,5
2129	<1	<5	<3	<10
2132	<10	<10	<10	<50
2135	-----	-----	-----	-----
2137	-----	-----	-----	-----
2165	<2.5	<10	<1	<10
2172	<5	<5	<5	<5
2184	<2.5	<10	<1	<10
2190	<10	<5	<4	<50
2201	<10	<10	<10	<100
2213	<10	<10	<50	<50
2230	<2	<2	<2	<2
2238	<10	<10	<2.5	<100
2241	0.396	0.033	0.201	3.405
2247	< 5	< 5	< 5	< 5
2250	0.26577	<1	0.2466	4.9566
2256	<2	<2	1006	7.606
2271	-----	-----	-----	-----
2290	<10	<5	<10	<100
2293	-----	1.12	-----	-----
2294	< 2.5	< 5	< 5	15.750
2296	<0.48	<1.0	<1.4	1.6918
2297	<5	<5	<5	<50
2301	2.9200	0	0	0
2320	0.313	0.135	0.019	0.371
2330	ND	ND	ND	ND
2350	<10	<5	<0.36	<50
2370	<10	<10	<4.9	<50
2375	-----	-----	-----	-----
2385	<1	1.9	<1	6.04
2410	<10	<10	<10	<100
2429	<10	<10	<10	<100
2431	-----	-----	-----	-----
2432	-----	-----	-----	-----
2433	-----	-----	-----	-----
2442	-----	-----	-----	-----
2445	0.406	0.214	0.222	3.47
2446	0.254257	-----	0.424365	7.862758
2459	ND	ND	ND	ND
2475	-----	-----	-----	-----
2495	-----	-----	-----	-----
2497	-----	-----	-----	-----
2500	ND	ND	ND	7.412
2509	-----	-----	-----	-----
2580	-----	-----	-----	6.6
2582	0.19	-----	-----	2.63
2590	5.235	< L.O.Q.	< L.O.Q.	< L.O.Q.
2637	<1	<0.5	<1	5
2642	-----	<5	-----	-----
2645	-----	-----	-----	-----
2674	n.d.	n.d.	n.d.	n.d.
2685	4.40	-----	-----	-----
2705	0.42	0.08	0.00	0.16
2725	0.68401	<0,133	<0,83	-----
2728	-----	ND	-----	-----
2819	<3	<0.1	-----	<1
2825	-----	-----	-----	-----
3116	-----	-----	-----	-----
3117	0	0	0	0
3118	<5	<5	<5	<5
3146	n.d.	n.d.	n.d.	n.d.
3150	-----	-----	-----	11.4
3153	<10	<10	<10	<100
3154	-----	-----	-----	5.37
3167	nd	nd	nd	nd
3172	< 10	< 10	< 50	< 50
3176	-----	-----	-----	-----
3182	ND	ND	ND	<5
3185	<10	<10	<10	<100

lab	Ni	Se	Sn	Zn
3190	<10	<5.0	<10	<100
3191	-----	-----	-----	16.9464
3197	<10	<1	<10	<50
3200	<10.0	<10.0	<10.0	<10.0
3209	<10.0	<10.0	<10.0	<10.0
3214	<10	<10	<10	<100
3216	0.759	0.025	0.051	0.289
3218	<10	<10	<3.9	<100
3220	ND	ND	ND	ND
3225	ND	ND	ND	ND
3228	<2.5	<10	<1	<10
3233	< 5	< 5	< 0.5	< 5
3237	-----	-----	-----	-----
3246	n.d.	n.d.	n.d.	n.d.
3248	ND	ND	ND	ND
8005	-----	-----	-----	-----

APPENDIX 2
Details as reported by the participants for sample #18542 only

lab	1. Is the laboratory ISO/IEC17025 accredited for this test?	2. How much (mg) dried paint was used in the determination ?	3. How much (ml) 0.07 mol/l HCl solution was used for the migration?	4. What was the pH of the solution after 1 minute of shaking?	5. Was the pH adjusted after 1 minute of shaking?	6. What was the pH after adjustment?	7. How long did the shaking at 37°C take (in minutes)?	8. How long stood the solution at 37°C after shaking (min)?
310	Yes	0,2500	12,5	1,4/5,5/5,4	Yes	1,2/1,1/1,2	60	60
330	Yes	200 mg	10 ml		No			
551	No	200	10	1.9	No		60	60
1051	Yes	180	9	4.3	Yes	<1.3	60	60
1099	Yes	485.2	20			1.3	60	60
2115	Yes	100 mg	5	1.2	No		60 min	60 min
2118	No	200mg	10ml	pH 6	Yes	< 1.5	60 minutes	60 minutes
2120	Yes	200	10	we did not	No	not verify	60	60
2129	Yes				---			
2132	Yes	100 mg	5 ml	6.278	Yes	1.253	60 mins	60 mins
2135	Yes	200	10	7	---	1	60	60
2137	Yes	400	20	2.05	Yes	1.48	60minute	120minute
2165	Yes	100	5	>1.8	Yes	1.2	60	60
2172	Yes	112.5mg	5.63mL	2.4	Yes	1.2	60min	60min
2184	Yes	100	5	5.2	Yes	1.28	60	60
2190	Yes	200	10	6	Yes	1	60	60
2201	Yes	100mg	5ml	5.30	Yes	1.28	60	60
2213	Yes	100			---			
2230	Yes	100.7 mg	5 mL	pH 1.3	No	pH 1.3	60 min	60 min
2238	Yes	200	10	4.87	Yes	1.21	60	60
2241	Yes	100	5	5.7	Yes	1.1	60	60
2247	Yes	100 mg	5 ml	1.17	Yes	1.23	60 mns	60 mns
2250	Yes	100 mg	5	>1,3	No	1,2 - 1,3	60 min	60 min
2256	Yes	0.1391	6.96	5.652	Yes	1.261	60	60
2271	Yes	100	5	5.5	Yes	1.2	60	60
2290	---				---			
2293	Yes	200.0 mg	10 mL	5.69	Yes	1.49	30 minutes	30 minutes
2294	Yes	150.1 mg	7.5 mL	pH=5.28	Yes	1.15	60 min	60 min
2296	Yes	100.629	5.00	5.54	Yes	1.49	60	60
2297	Yes	100	5	5.4	Yes	1.27	1hr	1hr
2301	Yes	200	10	1.2	No		60	60
2320	Yes	200	10	yes	No		60	60
2330	Yes	0.20 g	10 ml	4.341	Yes	1.222	60 min	60 min
2350	Yes	0.25 g	12.5 mL	5.05	Yes	1.2	60 min	60 min
2370	Yes	200mg	10mL	pH = 4.99	Yes	pH = 1.28	60 minutes	60 minutes
2375	Yes	200mg	10ml	5.5	Yes	1.2	60 min	60 min
2385	Yes	200	10	5,68	Yes	1,15	60	60
2410	Yes	100 mg	5 mL	5.4	Yes	1.15	1 hr	1hr
2429	Yes	200	10	2.74	Yes	1.21	60	60
2431	Yes	100	5	5.64	Yes	1.21	60	60
2432	No	0.1mg	10		No		1h	1h
2433	No	0.1013g	1.3		No		60 min	60 min
2442	Yes	100mg	10ml	1.3	Yes	1.12	60 min	60 min
2445	Yes	200 mg	10 ml	pH>7	Yes	1.3-1.5	60 min	60 min
2446	Yes	100	5		Yes	1,2	60	60
2459	Yes	102.6	2.5	1.30	No	1.30	60	60
2475	Yes	194.7	9.7	5.01	Yes	1.18	60	60
2495	---				---			
2497	Yes	102	5	1.1	No		60	60
2500	Yes	100	5	9.6	Yes	1.23	60	60
2509	---				---			
2580	Yes	405	20	5,5	Yes	1,3	60	60
2582	Yes	0.1415	7.075	2.59	Yes	1.23	60	60

lab	1. Is the laboratory ISO/IEC17025 accredited for this test?	2. How much (mg) dried paint was used in the determination ?	3. How much (ml) 0.07 mol/l HCl solution was used for the migration?	4. What was the pH of the solution after 1 minute of shaking?	5. Was the pH adjusted after 1 minute of shaking?	6. What was the pH after adjustment?	7. How long did the shaking at 37°C take (in minutes)?	8. How long stood the solution at 37°C after shaking (min)?
2590	Yes	203,2	10	1.3	No		60	60
2637	---				---			
2642	Yes	0.2	10	<1.5	No		60	60
2645	Yes	100 mg	5 mL	>1.5	Yes	1.1 - 1.3	1 hour	1 hour
2674	Yes	about 100mg	5ml	>1.2	Yes	about 1.2	60min	60min
2685	Yes	100.8	5	6.5	Yes	1.3	60	60
2705	No	400	7.5	6	Yes	1.5	60	60
2725	No	180	9	4,37	Yes	1,21	60	60
2728	---				---			
2819	Yes	464.5	22	1,32	No		60	60
2825	Yes	100.3mg	5mL	5.45	Yes	1.26	1h	1h
3116	No	100	5		Yes	1.3	60	60
3117	Yes	100mg	10mL	1.20	No		60min	60min
3118	Yes	100	5	1.2	---		60	60
3146	Yes	250mg	12,5 ml	10,0	Yes	1,2	60 minutes	60 minutes
3150	No	10	5		No		60	15
3153	Yes	100	5	5.73	Yes	1.19	60	60
3154	Yes				---			
3167	No	220	11	about 4.8	Yes	1.2	60	60
3172	Yes				---			
3176	Yes	250 mg	12,5 ml		Yes	1,2	60 minutes	60 minutes
3182	Yes	200 mg	10 ml	5.74	Yes	1.22	60 minutes	60 minutes
3185	Yes	120mg	6ml	5.54	Yes	1.24	60 minutes	60 minutes
3190	Yes	0.1801g	9.0ml	5.55	Yes	1.22	1hour	1hour
3191	Yes	200mg	10mL	5.32	Yes	1.20	60 minutes	60 minutes
3197	Yes	200 mg	10 ml	4,4	Yes	1,26	60 minutes	60 minutes
3200	Yes	102.2mg	5.11ml	5.4	Yes	1.2	60min	60min
3209	Yes	0.1004	5	1.2	No	1.2	60	60
3214	Yes	201.8 mg	10 ml	4.790	Yes	1.205	60 minutes	60 minutes
3216	No	200 mg	10 ml	3.3	Yes	1.5	60 min	60 min
3218	Yes	0.20g	10mL	5.0	Yes	1.2	60min	60min
3220	Yes	100mg	5ml	2.1	Yes	1.0-1.2	60minutes	60minutes
3225	Yes	100	5	>7	Yes	1.15	60	60
3228	Yes	100mg	5ml		Yes	1.2	60min	60min
3233	Yes	0.1001	5	6.12	Yes	1.28	60	60
3237	Yes	0,2 g	10 ml	5,4	Yes	1,24	1 hour	1 hour
3246	Yes	300 mg	15 ml	5.6	Yes	1.26	60 min	60 min
3248	Yes	200	10	1.6	Yes	1.3	60	60
8005	---				---			

APPENDIX 3

Number of participants per country

1 lab in	BANGLADESH
1 lab in	BELGIUM
1 lab in	BRAZIL
1 lab in	CAMBODIA
22 labs in	CHINA, Peoples Republic of
4 labs in	FRANCE
10 labs in	GERMANY
1 lab in	GUATEMALA
10 labs in	HONG KONG
3 labs in	INDIA
4 labs in	INDONESIA
5 labs in	ITALY
1 lab in	LUXEMBOURG
1 lab in	MEXICO
1 lab in	NETHERLANDS
1 lab in	PAKISTAN
1 lab in	PHILIPPINES
1 lab in	POLAND
1 lab in	PORTUGAL
1 lab in	SERBIA
3 labs in	SOUTH KOREA
3 labs in	SPAIN
2 labs in	SRI LANKA
1 lab in	SWEDEN
4 labs in	TAIWAN R.O.C.
1 lab in	THAILAND
4 labs in	TURKEY
1 lab in	UNITED KINGDOM
2 labs in	VIETNAM

APPENDIX 4

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
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

Literature:

1 iis Interlaboratory Studies, Protocol for the Organisation, Statistics & Evaluation, March 2017
2 Council Directive 88/378/EEC
3 Council Directive 2009/48/EC
4 EN71-3:2013 + A1:2014, Safety of Toys - Migration of certain elements
5 16 CFR § 1303.1
6 16 CFR § 1303.2
7 ASTM F963-07 Standard Consumer Safety Specification for Toy Safety
5 W. Horwitz and R. Albert, Journal of AOAC International, Vol. 79, No.3, 589 (1996)
6 P.L. Davies, Fr. Z. Anal. Chem. 351 513 (1988)
7 W.J. Conover, Practical Nonparametric Statistics. J. Wiley & Sons NY, p.302 (1971)
8 ISO 5725 (1986)
9 ISO 5725 parts 1-6 (1994)
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