

**Results of Proficiency Test
Migration of elements EN71-3
April 2017**

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

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Report: iis17V02-revised

July 2017

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SUMMARY OF CHANGES

This revised report replaces the original report iis17V02 of July 2017.

After issue of the report iis17V02 it was found that the evaluation of sample #17557 was not done correctly. Instead of the intended exclusion of the suspect test results of the laboratories that did not add extra acid after the first minute of shaking, also the test results of the laboratories that did use a deviating ratio sample intake vs acid volume (other than 20 mg sample and 1 ml acid solution) were excluded by accident.

Therefore, the tables and graphs of the Aluminium, Cobalt, Manganese and Strontium determinations on dried paint sample#17557 in appendix 1, the summary of these four elements in table 3 and 5 as well as the evaluation in paragraph 4.1 were changed for this revised report.

Therefore the following pages in this report have been revised:

- Page 4: The page numbering was changed, due to the addition of this summary page
- Page 9: Some summary numbers in paragraph 4 were changed
- Page 12: Aluminium evaluation
- Page 12: Cobalt evaluation
- Page 12: Manganese evaluation
- Page 12: Strontium evaluation
- Page 13 (table 3): reproducibilities of test results in dried paint sample #17557
- Page 15 (table 5): 2017 uncertainties of Al, Mn and Sr were changed
- Appendix 1 page 48-55

CONTENTS

1 INTRODUCTION 5

2 SET UP 5

2.1 ACCREDITATION..... 5

2.2 PROTOCOL 6

2.3 CONFIDENTIALITY STATEMENT 6

2.4 SAMPLES..... 6

2.5 ANALYSES 7

3 RESULTS..... 7

3.1 STATISTICS..... 8

3.2 GRAPHICS..... 8

3.3 Z-SCORES 9

4 EVALUATION..... 9

4.1 EVALUATION PER SAMPLE AND PER ELEMENT 10

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES 13

4.3 COMPARISON OF THE PROFICIENCY TEST OF APRIL 2017 WITH PREVIOUS PTS 14

5 DISCUSSION 15

Appendices:

1. Data and statistical results 18

2. Details as reported by the participants 60

3. Number of participants per country 62

4. Abbreviations and literature 63

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 toys 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 89 laboratories in 26 different countries registered for participation. See appendix 3 for the number of participants per country. In this report, the results of the 2017 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 #17555) was a plaster to which Antimony, Cobalt, Copper and Lead salts were added. The second sample (labelled #17556) was a paper sample fortified with Chromium. The third sample (labelled #17557) was a dried paint fortified with Cobalt and Manganese. 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 #17555) the elements Antimony, Cobalt, Copper and Lead 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 #17555. 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 577 - 696 mg/kg, for Cobalt between 405 - 419 mg/kg, for Copper between 106 - 120 mg/kg and for Lead between 72.4 – 77.8 mg/kg. The differences between the test results for homogeneity of the subsamples #17555 were all well within the precision of the laboratory and therefore the homogeneity of the subsamples #17555 was assumed.

A batch of paper was printed both sides with ink, that was enriched with Chromium. After thorough mixing/homogenizing of the ink, it was used to print 75 sheets of paper. After drying, the sheets of paper were cut into pieces (approximately 1 gram each). 139 plastic bags were filled with two pieces of paper and labelled #17556. The homogeneity of the subsamples was verified by measuring Chromium after migration according to EN71-3 on 8 stratified randomly selected samples. The migration test results for Chromium varied between 62.1 – 81.3 mg/kg. The differences between the test results for homogeneity of the subsamples #17556 were well within the precision of the laboratory and therefore the homogeneity of the subsamples #17556 was assumed.

A batch of liquid paint (used for sample #17557) was enriched with the elements Cobalt and Manganese. After application to a surface, drying, scraping off, milling, sieving and homogenization, a total of 150 samples of 0.5 gram were prepared and labelled #17557. The homogeneity of the subsamples #17557 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 and for Manganese between 173.2 – 181.3 mg/kg.

The differences between the test results for homogeneity of the subsamples #17557 were all well within the precision of the laboratory and therefore the homogeneity of the subsamples #17557 was assumed.

One plastic bag with 0.5 gram of plaster (#17555), one plastic bag with 2 pieces of 1.0 gram of printed paper (#17556) and one plastic bag with 0.5 gram of scraped-off dried paint (#17557) were sent to the participating laboratories on April 5, 2017.

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 #17557 (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:

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

The $z_{(\text{target})}$ 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. Four 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 88 reporting laboratories submitted 1745 numerical test results. Observed were 30 outlying results, which is 1.7%. In proficiency studies outlier percentages of 3% - 7.5% are quite normal.

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 #17555: Aluminium, Antimony, Copper, Lead, Manganese and Strontium, for sample #17556: Aluminium, Chromium, Manganese and Strontium and for sample #17557: Aluminium, Cobalt, Manganese and Strontium.

The participants were also requested to report some analytical details of the determination on the dried paint sample #17556 and whether or not they are accredited to perform "Migration of elements". Of all reporting laboratories 88% is ISO/IEC 17025 accredited for the migration of elements (EN71-3 or ISO 8124-3).

One laboratory (2561) reported many deviating test results. At least nine of the fourteen test results were statistical outliers. As the fourteen test results are not independent, it was decided not to use any of the reported results of this laboratory for the statistical evaluation.

PLASTER Sample #17555

Aluminium: The determination of the migration of Aluminium was not problematic. Four statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers 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.

Antimony: The determination of the migration of Antimony at a level of 25.5 mg/kg may be problematic. Two statistical outliers were observed and one other test result was excluded from the statistical calculations. 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.

Cobalt: No significant conclusions were drawn as the consensus value is near or below the detection limit (23% participants reported a less than test result, 35% participants reported a numerical test result).

Copper: The determination of the migration of Copper at a low level of 56.2 mg/kg may be problematic. Two statistical outliers were observed and one other test result was excluded from the statistical calculations. 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.

Lead: The determination of the migration of Lead was not problematic. Three statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers 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.

Manganese: The determination of the migration of Manganese was not problematic. Three statistical outliers were observed and one other test result was excluded from the statistical calculations. 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 low level of 332 mg/kg may be problematic. One statistical outlier was observed and one other test result was excluded from statistical evaluation. 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.

PAPER Sample #17556:

Aluminium: No significant conclusions were drawn as the observed migration level for Aluminium from paper sample #17556 is very low compared to the migration limit mentioned in EN71-3:2013, category 3 (54 vs 70000 mg/kg).

Chromium: The determination of the migration of Chromium was not problematic. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers 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: No significant conclusions were drawn as the observed migration level for Strontium is very low compared to the migration limit mentioned in EN71-3:2013, category 3 (102 vs 56000 mg/kg).

DRIED PAINT Sample #17557:

For the dried paint sample (#17557) 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, the test results of the laboratories that did not add 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 excluded from the statistical calculations of these elements.

Aluminium: The determination of the migration of Aluminium may not be problematic. One statistical outlier was observed and eleven other 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 the 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 fourteen other 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 the report "Statistical evaluation of results from the round robin on EN71-3:13", ref. 16.

Manganese: The determination of the migration of Manganese may not be problematic. One statistical outlier was observed and fourteen other test results were excluded. However, the calculated reproducibility, after rejection of the suspect data is in full agreement with the target reproducibility based on the data in the 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 785 mg/kg may be problematic. One statistical outlier was observed and thirteen other 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 the 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.

<i>Element</i>	<i>unit</i>	<i>n</i>	<i>average</i>	<i>2.8 * sd</i>	<i>R (target)</i>
Aluminium	mg/kg	73	316	204	486
Antimony	mg/kg	73	25.5	33.6	27.8
Cobalt	mg/kg	51	<2	n.a.	n.a.
Copper	mg/kg	70	56.2	44.7	36.2
Lead	mg/kg	78	38.5	24.1	28.0
Manganese	mg/kg	70	65.0	23.7	22.2
Strontium	mg/kg	73	329	191	175

Table 1: reproducibilities of test results in plaster sample #17555

<i>Element</i>	<i>unit</i>	<i>n</i>	<i>average</i>	<i>2.8 * sd</i>	<i>R (target)</i>
Aluminium	mg/kg	60	54.1	88.0	(104.5)
Chromium	mg/kg	80	30.6	21.2	24.8
Manganese	mg/kg	41	7.0	5.6	(4.7)
Strontium	mg/kg	77	102	71	(46)

Table 2: reproducibility of test results in paper sample #17556

<i>Element</i>	<i>unit</i>	<i>n</i>	<i>average</i>	<i>2.8 * sd</i>	<i>R (target)</i>
Aluminium	mg/kg	39	59.3	95.8	114.6
Cobalt	mg/kg	66	145	81	227
Manganese	mg/kg	65	128	92	86
Strontium	mg/kg	64	785	550	352

Table 3: reproducibilities of test results in dried paint sample #17557

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 2017 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:

<i>Element</i>	<i>April 2017</i>	<i>April 2016</i>	<i>April 2015</i>	<i>April 2014</i>	<i>April 2013</i>	<i>Target*) category1</i>
Aluminium	23%	20%	20%	21%	--	55%
Antimony	47%	--	--	28%	--	39%
Arsenic	--	32%	--	--	--	40%
Barium	--	--	20%	--	--	29%
Boron	--	--	--	--	--	21%
Cadmium	--	--	--	--	--	45%
Chromium	--	44%	--	--	--	23%
Cobalt	--	--	--	--	--	16%
Copper	28%	17%	--	--	22%	23%
Lead	22%	22%	19%	18%	22%	26%
Manganese	13%	16%	13%	12%	--	12%
Mercury	--	--	--	--	--	n.a.
Nickel	--	--	15%	--	--	24%
Selenium	--	--	25%	--	--	54%
Strontium	21%	18%	18%	--	--	19%
Tin	--	--	--	--	--	37%
Organic Tin	--	--	--	--	--	39%
Zinc	--	--	--	--	14%	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.

Element	April 2017	April 2016	April 2015	April 2014	April 2013	February 2012	March 2011	April 2010	Target*) categor
Aluminium	58%	16%	17%	37%	34%	--	--	--	69%
Antimony	--	28%	--	22%	22%	33%	23%	--	61%
Arsenic	--	20%	--	14%	16%	--	13%	--	45%
Barium	--	--	--	--	--	48-57%	42-76%	20%	22%
Boron	--	--	12%	--	--	--	--	--	14%
Cadmium	--	13%	12%	12%	13%	--	11-14%	--	56%
Chromium III	25%	17%	14%	--	--	23%	--	6%	29%
Chromium VI	--	--	--	--	--	--	--	--	46%
Cobalt	20%	--	10%	--	--	--	18%	--	56%
Copper	--	--	--	--	--	11-12%	--	--	28%
Lead	--	22%	12%	--	--	22%	18-19%	12-13%	22%
Manganese	26%	24%	--	13%	15%	--	--	--	24%
Mercury	--	--	--	--	--	--	55%	--	n.a.
Nickel	--	--	21%	14%	16%	--	15-18%	--	35%
Selenium	--	--	--	--	--	26%	--	--	51%
Strontium	25%	13%	--	--	--	--	--	--	16%
Tin	--	--	--	--	--	32-42%	--	--	32%
Organic Tin	--	--	--	--	--	--	--	--	39%
Zinc	--	--	--	13%	17%	11-39%	--	--	43%

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.

For the investigated elements the performance of the group is not as good as in previous years. However, the performance of the group is still good in comparison with the precision requirements of EN71-3, except for the element Strontium.

5 DISCUSSION

In the previous proficiency test iis16V02 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 #17557), 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: 0.07 mol/l HCl

This ratio varied from 0.25 up to 40 (lab 2294: 49.3mg/200ml and lab 310: 499mg/12.5ml); 84% of the laboratories reported to have used a ratio of 20:1 as mentioned in EN 71-3 and ISO 8124-3, but 16% of the laboratories reported to have used a deviating ratio.

The influence of the deviating ratios on the element concentrations does not show to be not significant for the dried paint sample evaluated in this PT. Therefore, the test results reported by the laboratories that used a deviating ratio were not excluded from the statistical calculations for sample #17557.

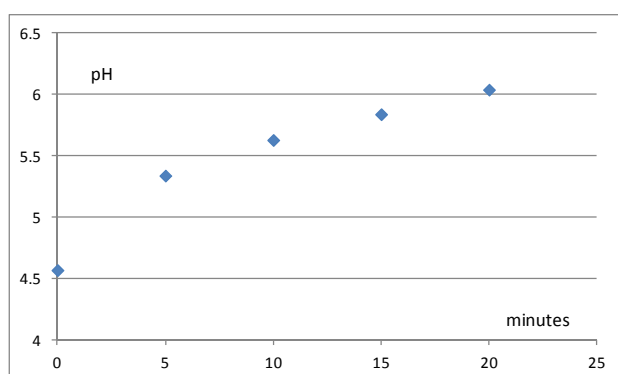
pH adjustment

About 83% of the laboratories did adjust the pH after one minute shaking at 37°C, while 17% did not do that. The influence of the adjustment of the pH on the element concentrations is significant. See also the previous report of the migration of elements EN71-3 (iis16V02). 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 the test results reported by the laboratories that did not adjust the pH after one minute were excluded from the statistical calculations for sample #17557. It was not investigated why these laboratories did incorrectly measure a pH<1.5 after one minute of shaking. It may be an erratic pH measurement or may be the shaking was omitted.

The migration capability does vary very much per element and per matrix. For example Cobalt and Lead hardly migrate from plaster, while both elements do migrate readily from dried paint, see appendix 1

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 #17555 and category III for paper sample #17556 and for dried paint sample #17557), 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 #17555 would be rejected by all laboratories for Lead, with the exception of laboratories 2561 and 2650 that reported a Lead test result below the maximum migration limit of 13.5 mg/kg. Furthermore, plaster sample #17555 would also be rejected by six laboratories for Antimony, these six laboratories reported a test result above the maximum migration limit of 45 mg/kg. For all other elements the laboratories would accept the plaster sample #17555 as the reported test results are below the maximum migration limits.

Paper sample #17556 would be accepted by all laboratories as no laboratory reported an element above the maximum migration limits.

Dried paint sample #17557 would be rejected by 49 of the 80 reporting laboratories for a Cobalt concentration above the maximum migration limit of 130 mg/kg.

Sample #17557 would be accepted by all laboratories for Aluminium, Manganese and Strontium.

The maximum migration limits are given in table 6.

<i>Element</i>	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

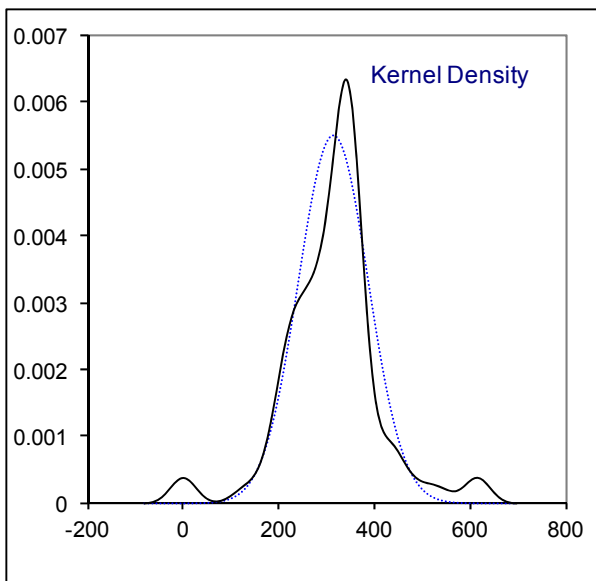
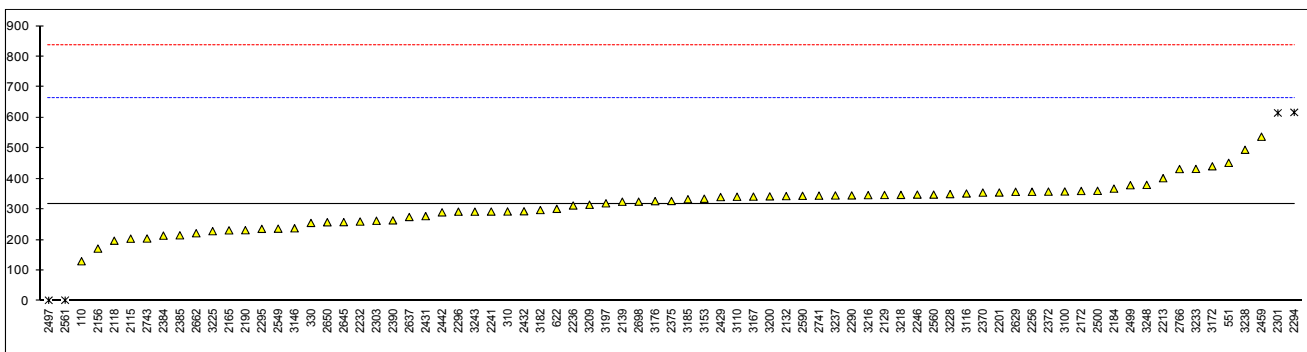
APPENDIX 1

Determination of migration of Aluminium as Al on plaster/chalk sample #17555; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	130.243		-1.07	
310	EN71-3	293		-0.13	
330	EN71-3	255.522		-0.35	
551	EN71-3	452.2		0.78	
622	EN71-3	301.7864		-0.08	
1051		----		----	
2115	EN71-3	204.00		-0.64	
2118	EN71-3	197.37		-0.68	
2129	EN71-3	347		0.18	
2132	EN71-3	343.31		0.16	
2139	EN71-3	325		0.05	
2156	EN71-3	171.55		-0.83	
2165	EN71-3	231.30		-0.49	
2172	EN71-3	360.223		0.26	
2184	EN71-3	367.9		0.30	
2190	EN71-3	231.83		-0.48	
2201	EN71-3	355.2		0.23	
2213	EN71-3	402		0.50	
2232	EN71-3	260.1		-0.32	
2236	EN71-3	312.67		-0.02	
2241	EN71-3	292.881		-0.13	
2246	EN71-3	348.23		0.19	
2256	EN71-3	357.50		0.24	
2284		----		----	
2290	EN71-3	345.7		0.17	
2293		----		----	
2294	EN71-3	617.391	R(0.01)	1.74	
2295	EN71-3	236.2		-0.46	
2296	EN71-3	292.45		-0.13	
2299		----		----	
2301	EN71-3	615.6400	R(0.01)	1.73	
2303	EN71-3	262.65		-0.31	
2330		----		----	
2370	EN71-3	355		0.23	
2372	EN71-3	358		0.24	
2375	EN71-3	327.3		0.07	
2380		----		----	
2384	EN71-3	214.04		-0.59	
2385	EN71-3	215		-0.58	
2390	EN71-3	263.90		-0.30	
2413		----		----	
2429		340.26		0.14	
2431	EN71-3	277.7665		-0.22	
2432	EN71-3	293.86		-0.13	
2442	EN71-3	290.22		-0.15	
2459	EN71-3	537.754		1.28	
2475		----		----	
2497		2.261	R(0.01)	-1.81	
2499	EN71-3	379.041		0.36	
2500	EN71-3	360.67		0.26	
2549	EN71-3	236.78		-0.46	
2560	EN71-3	348.3258		0.19	
2561	EN71-3	2.57	R(0.01)	-1.80	
2590	EN71-3	344.311		0.16	
2629	EN71-3	357.45		0.24	
2637	EN71-3	275		-0.24	
2642		----		----	
2645	EN71-3	258.3		-0.33	
2650	In house	257.796		-0.33	
2659		----		----	
2662	EN71-3	221.8		-0.54	
2698	EN71-3	325.2566		0.05	
2728	ISO8124-3	ND		----	
2741	EN71-3	344.9		0.17	
2743	EN71-3	204.64045		-0.64	
2766	EN71-3	432		0.67	
3100	EN71-3	358.45211		0.25	
3110	EN71-3	341.25		0.15	
3116	EN71-3	352		0.21	
3146	EN71-3	238		-0.45	
3153	EN71-3	334.8		0.11	
3167		341.7		0.15	
3172		441		0.72	
3176	EN71-3	326.942		0.06	
3182	EN71-3	297.679		-0.10	
3185	EN71-3	333.2		0.10	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	319.9		0.02	
3200	EN71-3	342.52		0.15	
3209	EN71-3	315.0		0.00	
3216	EN71-3	346.5923		0.18	
3218	EN71-3	347.37		0.18	
3225	EN71-3	228.63		-0.50	
3228	EN71-3	350.0		0.20	
3233	EN71-3	432.3169		0.67	
3237	EN71-3	345.5		0.17	
3238	EN71-3	495		1.03	
3243	EN71-3	292.45		-0.13	
3248	EN71-3	380		0.37	

normality OK
 n 73
 outliers 4
 mean (n) 315.86
 st.dev. (n) 72.680
 R(calc.) 203.50
 R(RR prEN71-3:13) 486.42

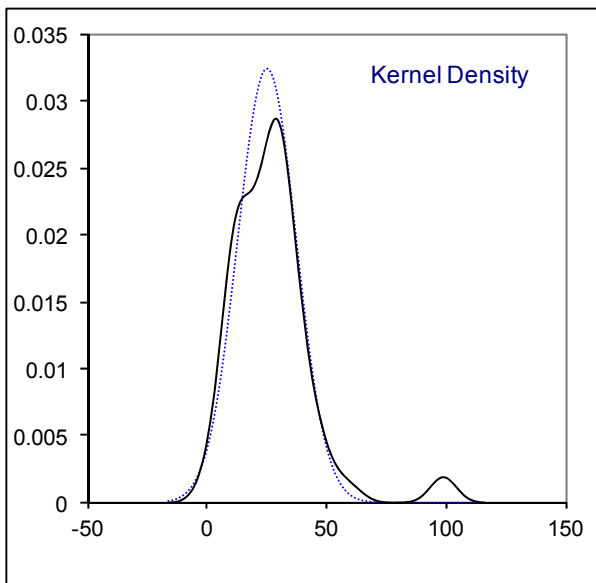
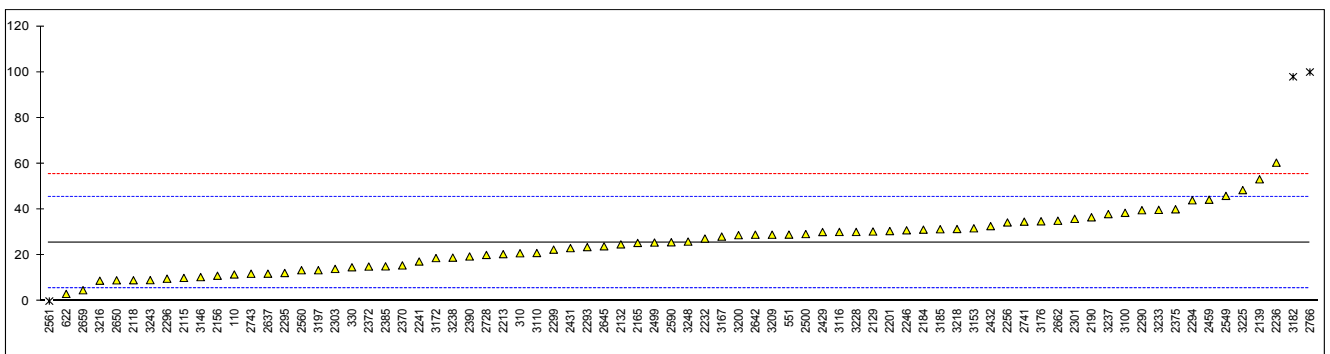


Determination of migration of Antimony as Sb on plaster/chalk sample #17555; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	11.661		-1.39	
310	EN71-3	20.92		-0.46	
330	EN71-3	14.795		-1.07	
551	EN71-3	29.04		0.36	
622	EN71-3	3.1587		-2.25	
1051		----		----	
2115	EN71-3	10.14		-1.54	
2118	EN71-3	9.14		-1.64	
2129	EN71-3	30.4		0.50	
2132	EN71-3	24.79		-0.07	
2139	EN71-3	53.2		2.79	
2156	EN71-3	11.09		-1.45	
2165	EN71-3	25.42		-0.01	
2172	EN71-3	----		----	
2184	EN71-3	31.2		0.58	
2190	EN71-3	36.61		1.12	
2201	EN71-3	30.6		0.52	
2213	EN71-3	20.52		-0.50	
2232	EN71-3	27.32		0.19	
2236	EN71-3	60.44		3.52	
2241	EN71-3	17.314		-0.82	
2246	EN71-3	30.94		0.55	
2256	EN71-3	34.36		0.89	
2284		----		----	
2290	EN71-3	39.7		1.43	
2293	EN71-3	23.60		-0.19	
2294	EN71-3	44.028	C	1.87	First reported 99.367
2295	EN71-3	12.3		-1.33	
2296	EN71-3	9.80		-1.58	
2299	NTP324.001-3	22.4915		-0.30	
2301	EN71-3	35.9400		1.05	
2303	EN71-3	14.08		-1.15	
2330		----		----	
2370	EN71-3	15.6		-0.99	
2372	EN71-3	15.1		-1.04	
2375	EN71-3	40.1		1.47	
2380		----		----	
2384	EN71-3	< 10		----	
2385	EN71-3	15.2		-1.03	
2390	EN71-3	19.50		-0.60	
2413		----		----	
2429	----	30.18		0.47	
2431	EN71-3	23.1639		-0.23	
2432	EN71-3	32.75		0.73	
2442	EN71-3	n.d.	C	----	First reported 126.41. False negative test result?
2459	EN71-3	44.274		1.89	
2475		----		----	
2497		----		----	
2499	EN71-3	25.579		0.01	
2500	EN71-3	29.28		0.38	
2549	EN71-3	45.95	C	2.06	First reported <10
2560	EN71-3	13.4933		-1.21	
2561	EN71-3	0.04	ex	-2.56	Result excluded, see §4.1
2590	EN71-3	25.710		0.02	
2629		----		----	
2637	EN71-3	12		-1.36	
2642	ASTM F963	29		0.36	
2645	EN71-3	23.95		-0.15	
2650	In house	9.097		-1.65	
2659	ISO8124-3	4.771		-2.08	
2662	EN71-3	35.1		0.97	
2698		----		----	
2728	ISO8124-3	20.17		-0.53	
2741	EN71-3	34.7		0.93	
2743	EN71-3	11.970516		-1.36	
2766	EN71-3	100	R(0.01)	7.50	
3100	EN71-3	38.55872		1.32	
3110	EN71-3	21.02		-0.45	
3116	EN71-3	30.2		0.48	
3146	EN71-3	10.5		-1.51	
3153	EN71-3	31.8		0.64	
3167	----	28.17		0.27	
3172	----	18.80		-0.67	
3176	EN71-3	34.864		0.95	
3182	EN71-3	97.93	C,R(0.01)	7.29	First reported 138.269
3185	EN71-3	31.4		0.60	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	13.5		-1.21	
3200	EN71-3	28.81		0.34	
3209	EN71-3	29.0		0.36	
3216	EN71-3	8.9245		-1.67	
3218	EN71-3	31.48		0.60	
3225	EN71-3	48.48		2.32	
3228	EN71-3	30.2		0.48	
3233	EN71-3	39.8374		1.45	
3237	EN71-3	38.0		1.26	
3238	EN71-3	19		-0.65	
3243	EN71-3	9.17		-1.64	
3248	EN71-3	26		0.05	

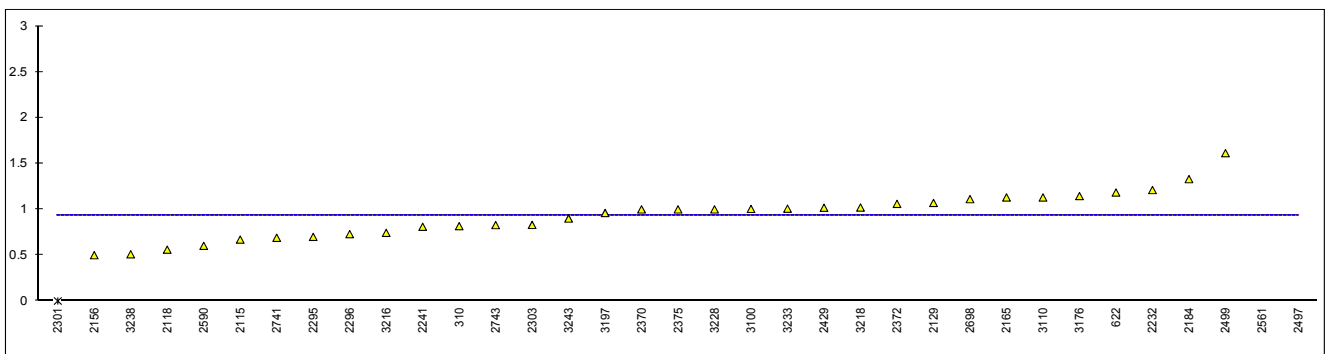
normality OK
 n 73
 outliers 2 (+1 excl)
 mean (n) 25.471
 st.dev. (n) 12.0015
 R(calc.) 33.604
 R(RR prEN71-3:13) 27.814



Determination of migration of Cobalt as Co on plaster/chalk sample #17555; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	----		----	
310	EN71-3	0.817		----	
330	EN71-3	< 2		----	
551	EN71-3	ND		----	
622	EN71-3	1.1836		----	
1051		----		----	
2115	EN71-3	0.67		----	
2118	EN71-3	0.56		----	
2129	EN71-3	1.07		----	
2132	EN71-3	<1.0		----	
2139	EN71-3	< 10		----	
2156	EN71-3	0.50		----	
2165	EN71-3	1.13		----	
2172	EN71-3	<10		----	
2184	EN71-3	1.33		----	
2190	EN71-3	<1		----	
2201	EN71-3	<1.0		----	
2213	EN71-3	<1		----	
2232	EN71-3	1.211		----	
2236	EN71-3	<2.0		----	
2241	EN71-3	0.810		----	
2246	EN71-3	<1.0		----	
2256	EN71-3	----		----	
2284		----		----	
2290	EN71-3	<1		----	
2293	EN71-3	----		----	
2294	EN71-3	----		----	
2295	EN71-3	0.7		----	
2296	EN71-3	0.73		----	
2299	NTP324.001-3	----		----	
2301	EN71-3	0		----	
2303	EN71-3	0.83		----	
2330		----		----	
2370	EN71-3	1.00		----	
2372	EN71-3	1.06		----	
2375	EN71-3	1.0		----	
2380		----		----	
2384	EN71-3	< 10		----	
2385	EN71-3	<1		----	
2390	EN71-3	ND		----	
2413		----		----	
2429	----	1.018		----	
2431	EN71-3	----		----	
2432	EN71-3	----		----	
2442	EN71-3	----		----	
2459	EN71-3	<0.1		----	
2475		----		----	
2497		155.37	C	----	False positive test result?
2499	EN71-3	1.613		----	
2500	EN71-3	ND		----	
2549	EN71-3	<10		----	
2560	EN71-3	ND		----	
2561	EN71-3	77.74	C	----	False positive test result?
2590	EN71-3	0.602		----	
2629		----		----	
2637	EN71-3	<1		----	
2642	ASTM F963	----		----	
2645	EN71-3	ND		----	
2650	In house	<1		----	
2659	ISO8124-3	----		----	
2662	EN71-3	<2		----	
2698		1.1115		----	
2728	ISO8124-3	ND		----	
2741	EN71-3	0.69		----	
2743	EN71-3	0.8281685		----	
2766	EN71-3	----		----	
3100	EN71-3	1.004423		----	
3110	EN71-3	1.13		----	
3116	EN71-3	----		----	
3146	EN71-3	n.d.		----	
3153	EN71-3	<1		----	
3167	----	ND		----	
3172	----	< 5		----	
3176	EN71-3	1.145		----	
3182	EN71-3	ND		----	
3185	EN71-3	<2		----	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	0.96		----	
3200	EN71-3	<2.0		----	
3209	EN71-3	<1.0		----	
3216	EN71-3	0.7437		----	
3218	EN71-3	1.02		----	
3225	EN71-3	<10		----	
3228	EN71-3	1.0		----	
3233	EN71-3	1.0076		----	
3237	EN71-3	----		----	
3238	EN71-3	0.51		----	
3243	EN71-3	0.9		----	
3248	EN71-3	<10		----	
	normality	OK			
	n	51			
	outliers	n.a.			
	mean (n)	<2			
	st.dev. (n)	n.a.			
	R(calc.)	n.a.			
	R(RR prEN71-3:13)	n.a.			

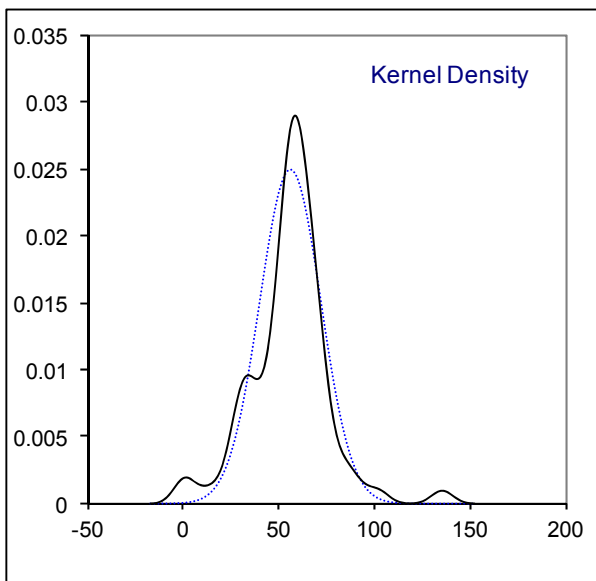
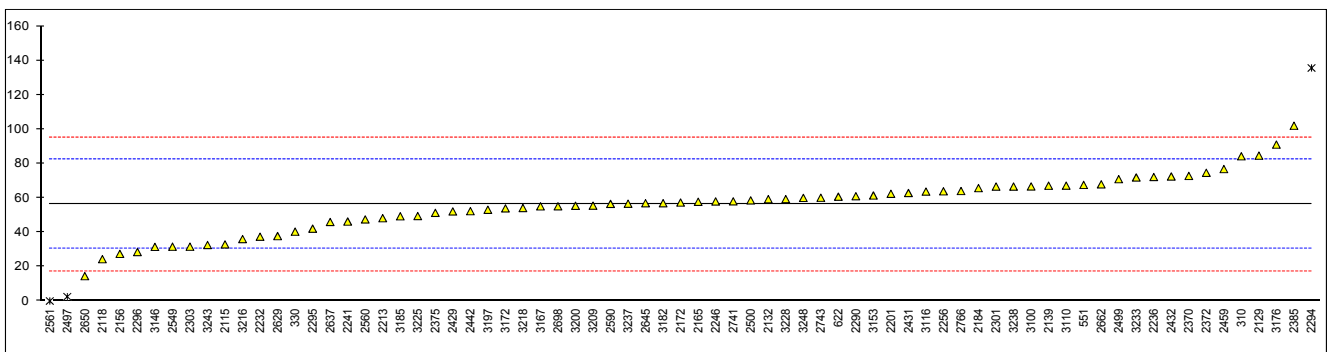


Determination of migration of Copper as Cu on plaster/chalk sample #17555; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110		----		----	
310	EN71-3	84.21		2.16	
330	EN71-3	40.353		-1.23	
551	EN71-3	67.55		0.87	
622	EN71-3	60.7063		0.34	
1051		----		----	
2115	EN71-3	32.96		-1.80	
2118	EN71-3	24.36		-2.46	
2129	EN71-3	84.6		2.19	
2132	EN71-3	59.27		0.23	
2139	EN71-3	67.1		0.84	
2156	EN71-3	27.44		-2.23	
2165	EN71-3	57.75		0.12	
2172	EN71-3	57.301		0.08	
2184	EN71-3	65.7		0.73	
2190	EN71-3	<50		----	
2201	EN71-3	62.4		0.48	
2213	EN71-3	48.2		-0.62	
2232	EN71-3	37.43		-1.45	
2236	EN71-3	72.17		1.23	
2241	EN71-3	46.245		-0.77	
2246	EN71-3	57.94		0.13	
2256	EN71-3	63.84		0.59	
2284		----		----	
2290	EN71-3	61.0		0.37	
2293		----		----	
2294	EN71-3	135.615	C,R(0.01)	6.14	First reported 228.735
2295	EN71-3	42.1		-1.09	
2296	EN71-3	28.51		-2.14	
2299		----		----	
2301	EN71-3	66.6000		0.80	
2303	EN71-3	31.61		-1.90	
2330		----		----	
2370	EN71-3	72.8		1.28	
2372	EN71-3	74.6		1.42	
2375	EN71-3	51.3		-0.38	
2380		----		----	
2384	EN71-3	< 50		----	
2385	EN71-3	102		3.54	
2390	EN71-3	ND		----	
2413		----		----	
2429	----	52.13		-0.32	
2431	EN71-3	62.8541		0.51	
2432	EN71-3	72.46		1.25	
2442	EN71-3	52.29		-0.31	
2459	EN71-3	76.778		1.59	
2475		----		----	
2497	----	2.52	C,R(0.05)	-4.15	First reported 0.181
2499	EN71-3	70.899		1.13	
2500	EN71-3	58.57		0.18	
2549	EN71-3	31.6		-1.91	
2560	EN71-3	47.4763		-0.68	
2561	EN71-3	0	ex	-4.35	Result excluded, zero is not a real result
2590	EN71-3	56.513		0.02	
2629	EN71-3	37.775		-1.43	
2637	EN71-3	46		-0.79	
2642		----		----	
2645	EN71-3	56.91		0.05	
2650	In house	14.460		-3.23	
2659		----		----	
2662	EN71-3	67.9	C	0.90	First reported 125.2
2698	EN71-3	55.1044		-0.09	
2728	ISO8124-3	ND		----	
2741	EN71-3	58.0		0.14	
2743	EN71-3	60.088581		0.30	
2766	EN71-3	64		0.60	
3100	EN71-3	66.66158		0.81	
3110	EN71-3	67.12		0.84	
3116	EN71-3	63.7		0.58	
3146	EN71-3	31.5		-1.91	
3153	EN71-3	61.4		0.40	
3167	----	55.08		-0.09	
3172	----	53.90		-0.18	
3176	EN71-3	91.012		2.69	
3182	EN71-3	56.9158		0.05	
3185	EN71-3	49.3		-0.54	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	53.1		-0.24	
3200	EN71-3	55.42		-0.06	
3209	EN71-3	55.5		-0.06	
3216	EN71-3	36.0441		-1.56	
3218	EN71-3	54.12		-0.16	
3225	EN71-3	49.44		-0.53	
3228	EN71-3	59.3		0.24	
3233	EN71-3	71.8922		1.21	
3237	EN71-3	56.63		0.03	
3238	EN71-3	66.6		0.80	
3243	EN71-3	32.6		-1.83	
3248	EN71-3	60		0.29	

normality OK
 n 70
 outliers 2 (+1excl)
 mean (n) 56.244
 st.dev. (n) 15.9545
 R(calc.) 44.672
 R(RR prEN71-3:13) 36.221

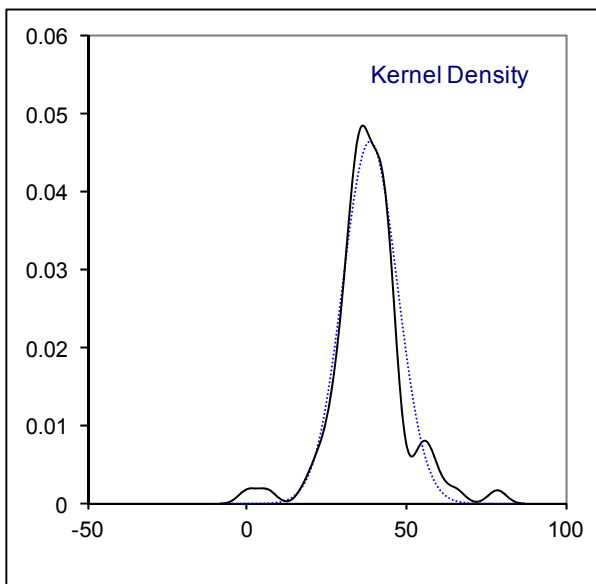
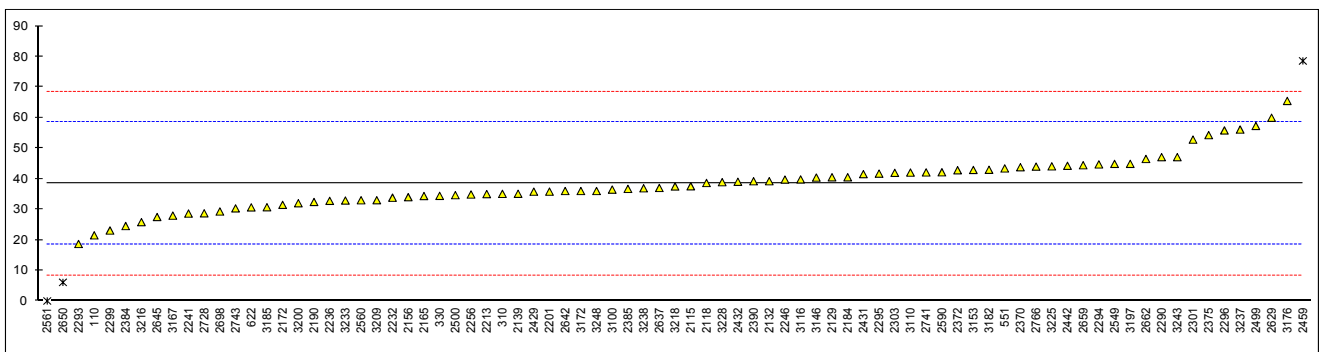


Determination of migration of Lead as Pb on plaster/chalk sample #17555; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	21.495		-1.70	
310	EN71-3	35.08		-0.34	
330	EN71-3	34.421		-0.41	
551	EN71-3	43.4		0.49	
622	EN71-3	30.6494		-0.79	
1051		----		----	
2115	EN71-3	37.55		-0.10	
2118	EN71-3	38.63		0.01	
2129	EN71-3	40.5		0.20	
2132	EN71-3	39.22		0.07	
2139	EN71-3	35.1		-0.34	
2156	EN71-3	33.99		-0.45	
2165	EN71-3	34.37		-0.41	
2172	EN71-3	31.469		-0.70	
2184	EN71-3	40.5		0.20	
2190	EN71-3	32.42		-0.61	
2201	EN71-3	35.8		-0.27	
2213	EN71-3	35		-0.35	
2232	EN71-3	33.82		-0.47	
2236	EN71-3	32.78		-0.57	
2241	EN71-3	28.621		-0.99	
2246	EN71-3	39.76		0.12	
2256	EN71-3	34.87		-0.37	
2284		----		----	
2290	EN71-3	47.1		0.86	
2293	EN71-3	18.66		-1.98	
2294	EN71-3	44.722	C	0.62	First reported 83.241
2295	EN71-3	41.7		0.32	
2296	EN71-3	55.84		1.73	
2299	NTP324.001-3	23.0753		-1.54	
2301	EN71-3	52.8300		1.43	
2303	EN71-3	41.96		0.34	
2330		----		----	
2370	EN71-3	43.8		0.53	
2372	EN71-3	42.8		0.43	
2375	EN71-3	54.3		1.57	
2380		----		----	
2384	EN71-3	24.54		-1.40	
2385	EN71-3	36.7		-0.18	
2390	EN71-3	39.20		0.07	
2413		----		----	
2429	----	35.79		-0.27	
2431	EN71-3	41.5415		0.30	
2432	EN71-3	39.03		0.05	
2442	EN71-3	44.26		0.57	
2459	EN71-3	78.587	R(0.01)	4.00	
2475		----		----	
2497	----	----		----	
2499	EN71-3	57.311		1.88	
2500	EN71-3	34.65		-0.39	
2549	EN71-3	44.89		0.64	
2560	EN71-3	32.9835		-0.55	
2561	EN71-3	0.01	R(0.01)	-3.85	
2590	EN71-3	42.132		0.36	
2629	EN71-3	59.985		2.14	
2637	EN71-3	37		-0.15	
2642	ASTM F963	36		-0.25	
2645	EN71-3	27.50		-1.10	
2650	In house	6.093	R(0.05)	-3.24	
2659	ISO8124-3	44.446		0.59	
2662	EN71-3	46.5		0.80	
2698	EN71-3	29.3012		-0.92	
2728	ISO8124-3	28.71		-0.98	
2741	EN71-3	42.1		0.36	
2743	EN71-3	30.315045		-0.82	
2766	EN71-3	44		0.55	
3100	EN71-3	36.469006		-0.21	
3110	EN71-3	42.05		0.35	
3116	EN71-3	39.8		0.13	
3146	EN71-3	40.4		0.19	
3153	EN71-3	42.9		0.44	
3167	----	27.95		-1.06	
3172	----	36.0		-0.25	
3176	EN71-3	65.485		2.69	
3182	EN71-3	42.961		0.44	
3185	EN71-3	30.7		-0.78	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	44.9		0.64	
3200	EN71-3	32.01		-0.65	
3209	EN71-3	33.0		-0.55	
3216	EN71-3	25.8281		-1.27	
3218	EN71-3	37.50		-0.10	
3225	EN71-3	44.08		0.55	
3228	EN71-3	38.9		0.04	
3233	EN71-3	32.8972		-0.56	
3237	EN71-3	56.12		1.76	
3238	EN71-3	36.9		-0.16	
3243	EN71-3	47.1		0.86	
3248	EN71-3	36		-0.25	

normality suspect
 n 78
 outliers 3
 mean (n) 38.527
 st.dev. (n) 8.5923
 R(calc.) 24.058
 R(RR prEN71-3:13) 28.047

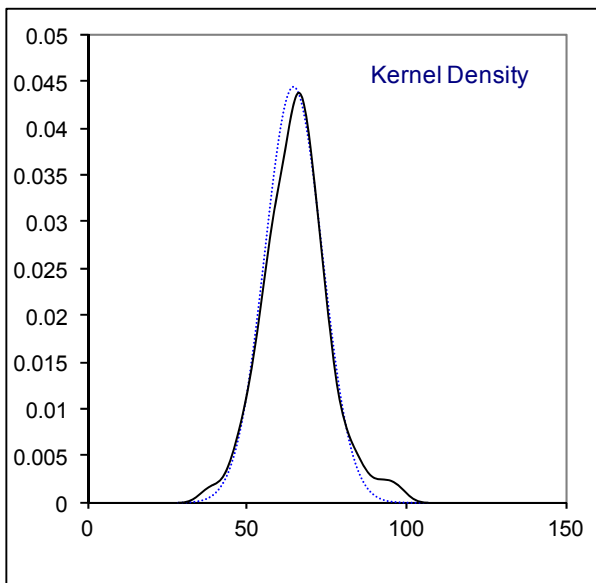
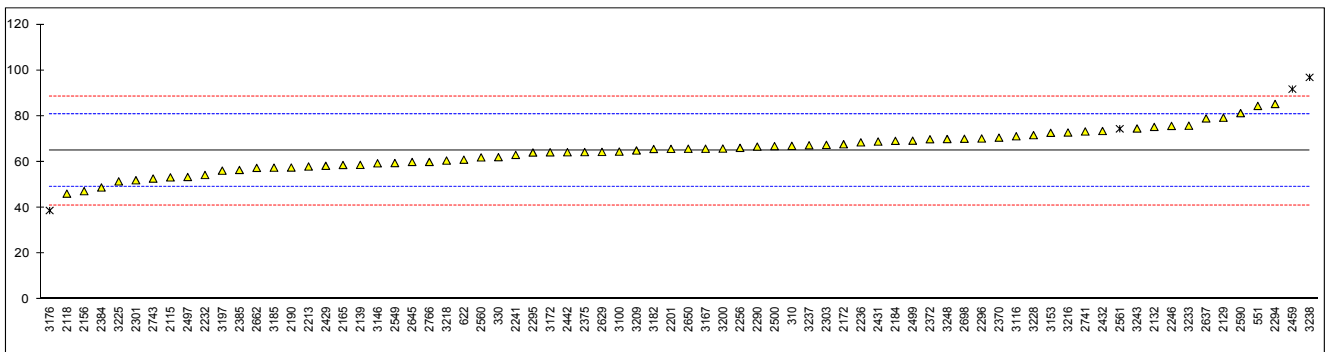


Determination of migration of Manganese as Mn on plaster/chalk sample #17555; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110		----		----	
310	EN71-3	67.02		0.26	
330	EN71-3	62.085		-0.36	
551	EN71-3	84.45		2.46	
622	EN71-3	60.9815		-0.50	
1051		----		----	
2115	EN71-3	53.26		-1.48	
2118	EN71-3	46.15		-2.37	
2129	EN71-3	79.3		1.81	
2132	EN71-3	75.29		1.30	
2139	EN71-3	58.7		-0.79	
2156	EN71-3	47.25		-2.23	
2165	EN71-3	58.66		-0.80	
2172	EN71-3	67.711		0.35	
2184	EN71-3	69.2		0.53	
2190	EN71-3	57.56		-0.93	
2201	EN71-3	65.7		0.09	
2213	EN71-3	58		-0.88	
2232	EN71-3	54.3		-1.35	
2236	EN71-3	68.54		0.45	
2241	EN71-3	63.075		-0.24	
2246	EN71-3	75.72		1.36	
2256	EN71-3	66.15		0.15	
2284		----		----	
2290	EN71-3	66.7		0.22	
2293		----		----	
2294	EN71-3	85.296		2.57	
2295	EN71-3	64.1		-0.11	
2296	EN71-3	70.23		0.66	
2299		----		----	
2301	EN71-3	52	C	-1.64	First reported 97.3600
2303	EN71-3	67.44		0.31	
2330		----		----	
2370	EN71-3	70.6		0.71	
2372	EN71-3	69.9		0.62	
2375	EN71-3	64.3		-0.08	
2380		----		----	
2384	EN71-3	48.85		-2.03	
2385	EN71-3	56.5		-1.07	
2390	EN71-3	ND		----	
2413		----		----	
2429	----	58.32		-0.84	
2431	EN71-3	68.8934		0.50	
2432	EN71-3	73.50		1.08	
2442	EN71-3	64.22		-0.09	
2459	EN71-3	91.798	R(0.05)	3.39	
2475		----		----	
2497	----	53.429		-1.46	
2499	EN71-3	69.285		0.55	
2500	EN71-3	66.92		0.25	
2549	EN71-3	59.52		-0.69	
2560	EN71-3	61.9690		-0.38	
2561	EN71-3	74.47	ex	1.20	Result excluded, see §4.1
2590	EN71-3	81.310		2.06	
2629	EN71-3	64.36		-0.08	
2637	EN71-3	79		1.77	
2642	ASTM F963	----		----	
2645	EN71-3	59.99		-0.63	
2650	In house	65.759		0.10	
2659	ISO8124-3	----		----	
2662	EN71-3	57.4		-0.95	
2698	EN71-3	70.1235		0.65	
2728	ISO8124-3	ND		----	
2741	EN71-3	73.3		1.05	
2743	EN71-3	52.744726		-1.54	
2766	EN71-3	60		-0.63	
3100	EN71-3	64.50722		-0.06	
3110	EN71-3	<100		----	
3116	EN71-3	71.2		0.79	
3146	EN71-3	59.4		-0.70	
3153	EN71-3	72.7		0.98	
3167	----	65.76		0.10	
3172	----	64.2		-0.10	
3176	EN71-3	38.8	C,R(0.05)	-3.30	First reported 26.43
3182	EN71-3	65.652		0.09	
3185	EN71-3	57.5		-0.94	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	56.2		-1.11	
3200	EN71-3	65.83		0.11	
3209	EN71-3	65.0		0.00	
3216	EN71-3	72.8559		1.00	
3218	EN71-3	60.60		-0.55	
3225	EN71-3	51.50		-1.70	
3228	EN71-3	71.7		0.85	
3233	EN71-3	75.8141		1.37	
3237	EN71-3	67.27		0.29	
3238	EN71-3	96.9	R(0.05)	4.03	
3243	EN71-3	74.6		1.22	
3248	EN71-3	70		0.64	

normality OK
 n 70
 outliers 3 (+1excl)
 mean (n) 64.962
 st.dev. (n) 8.4664
 R(calc.) 23.706
 R(RR prEN71-3:13) 22.191

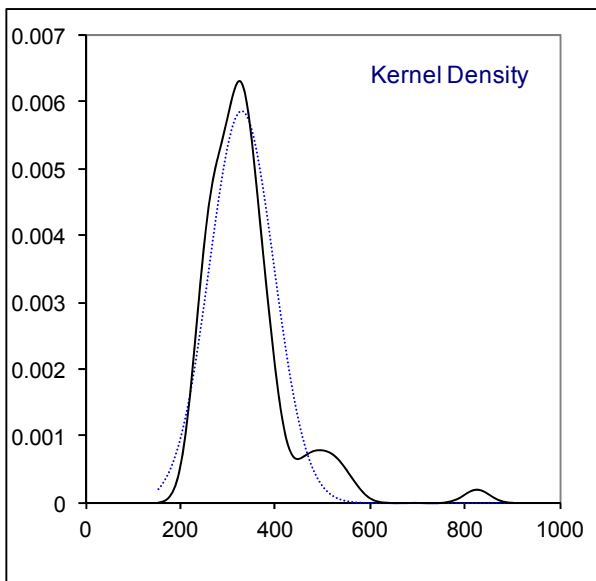
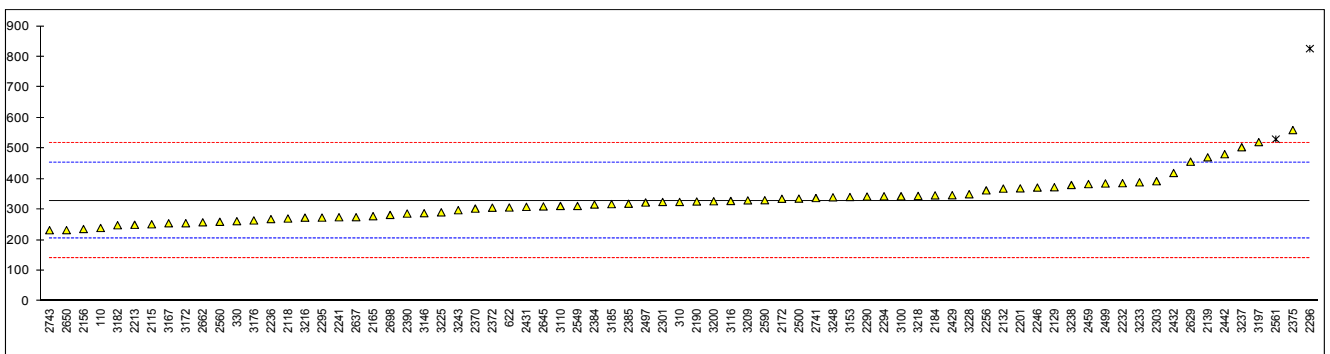


Determination of migration of Strontium as Sr on plaster/chalk sample #17555; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	239.524		-1.43	
310	EN71-3	324.8		-0.07	
330	EN71-3	261.831		-1.07	
551	EN71-3	NA		----	
622	EN71-3	306.5854		-0.36	
1051		----		----	
2115	EN71-3	251.78		-1.23	
2118	EN71-3	270.66		-0.93	
2129	EN71-3	373		0.71	
2132	EN71-3	368.45		0.63	
2139	EN71-3	470.9		2.27	
2156	EN71-3	236.10		-1.49	
2165	EN71-3	278.25		-0.81	
2172	EN71-3	335.123		0.10	
2184	EN71-3	346.3		0.28	
2190	EN71-3	326.33		-0.04	
2201	EN71-3	369.3		0.65	
2213	EN71-3	250		-1.26	
2232	EN71-3	386.2		0.92	
2236	EN71-3	268.7		-0.96	
2241	EN71-3	274.776		-0.87	
2246	EN71-3	371.85		0.69	
2256	EN71-3	362.63		0.54	
2284		----		----	
2290	EN71-3	342.5		0.22	
2293		----		----	
2294	EN71-3	343.391	C	0.23	First reported 1350.592
2295	EN71-3	273.6		-0.89	
2296	EN71-3	826.56	R(0.01)	7.96	
2299		----		----	
2301	EN71-3	324.7700		-0.07	
2303	EN71-3	392.61		1.02	
2330		----		----	
2370	EN71-3	303		-0.41	
2372	EN71-3	306		-0.37	
2375	EN71-3	560.1		3.70	
2380		----		----	
2384	EN71-3	316.30		-0.20	
2385	EN71-3	319		-0.16	
2390	EN71-3	286.80		-0.67	
2413		----		----	
2429	----	346.81		0.29	
2431	EN71-3	308.765		-0.32	
2432	EN71-3	419.59		1.45	
2442	EN71-3	481.10		2.44	
2459	EN71-3	383.291		0.87	
2475		----		----	
2497	----	322.966		-0.10	
2499	EN71-3	385.257	C	0.90	First reported 669.424
2500	EN71-3	335.66		0.11	
2549	EN71-3	311.66		-0.28	
2560	EN71-3	259.8701		-1.10	
2561	EN71-3	530.26	ex	3.22	Result excluded, see §4.1
2590	EN71-3	330.506		0.03	
2629	EN71-3	456.55		2.04	
2637	EN71-3	275		-0.86	
2642		----		----	
2645	EN71-3	310.15		-0.30	
2650	In house	232.609		-1.54	
2659		----		----	
2662	EN71-3	258.2		-1.13	
2698	EN71-3	282.3411		-0.75	
2728	ISO8124-3	ND		----	
2741	EN71-3	337.5		0.14	
2743	EN71-3	232.20286		-1.55	
2766		----		----	
3100	EN71-3	343.44659		0.23	
3110	EN71-3	311.60		-0.28	
3116	EN71-3	328		-0.01	
3146	EN71-3	288		-0.65	
3153	EN71-3	341.0		0.19	
3167	----	255.0		-1.18	
3172	----	255.2		-1.18	
3176	EN71-3	264.3	C	-1.03	First reported 712.83
3182	EN71-3	248.630		-1.28	
3185	EN71-3	317.7		-0.18	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	520.6		3.07	
3200	EN71-3	327.03		-0.03	
3209	EN71-3	330		0.02	
3216	EN71-3	273.4556		-0.89	
3218	EN71-3	344.52		0.25	
3225	EN71-3	290.81		-0.61	
3228	EN71-3	350		0.34	
3233	EN71-3	388.9451		0.96	
3237	EN71-3	503.90		2.80	
3238	EN71-3	380.2		0.82	
3243	EN71-3	297.8		-0.50	
3248	EN71-3	340		0.18	

normality not OK
 n 73
 outliers 1 (+1excl)
 mean (n) 328.92
 st.dev. (n) 68.223
 R(calc.) 191.03
 R(RR prEN71-3:13) 174.99



Determination of migration of Arsenic, Barium, Boron, Cadmium, Chromium and Mercury on plaster/chalk, sample #17555; results in mg/kg

lab	As	Ba	B	Cd	Cr	Hg
110	----	----	----	----	0.124	----
310	0.353	5.934	3.112	0.127	0.283	0
330	< 0.5	< 15	< 15	< 0.2	0.241	< 0.5
551	ND	8.63	NA	ND	ND	ND
622	0.0247	5.5462	6.6338	0.2479	0.3517	0.0000
1051	----	----	----	----	----	----
2115	0.26	5.08	3.85	----	0.21	----
2118	0.22	4.22	7.39	0.10	0.16	0
2129	0.432	<10	<10	0.125	0.433	<0,1
2132	<1.0	<25	<25	<1.0	<1.0	<0.1
2139	< 10	< 10	< 10	< 10	< 10	< 10
2156	1.17	0.10	0.10	0.15	0.25	0.10
2165	ND	ND	ND	ND	0.25	ND
2172	<10	<10	<10	<10	<10	<10
2184	----	6.84	----	0.16	----	----
2190	<0.5	<50	<50	<0.1	<5	<1
2201	<1.0	<10	<50	<0.5	<5.0	<1.0
2213	<5	<5	<5	<0.1	<0.5	<1
2232	ND	6.862	4.464	ND	ND	ND
2236	<2.0	4.94	9.18	<1.0	<2.0	<2.0
2241	0.390	4.542	4.655	0.085	0.265	0.000
2246	<1.0	<25	<25	<1.0	<1.0	<0.1
2256	----	----	----	----	----	----
2284	----	----	----	----	----	----
2290	<1	<10	<50	<0.5	<5	<1
2293	ND	5.62	----	ND	ND	ND
2294	----	9.176	17.278	ND	----	6.015
2295	0.31	4.5	0.8	0.12	0.3	----
2296	0	15.42	28.42	0.17	0.07	0
2299	0.1490	3.2425	----	0.0931	0.2007	0.0500
2301	7.6100	7.2800	7.3700	0	0	0
2303	0.63	5.43	4.69	0.12	0.25	0.0257
2330	----	----	----	----	----	----
2370	<0.5	<50	<50	0.14	<5	<0.5
2372	<0.5	<50	<50	0.145	<5	<0.5
2375	----	----	----	0.11	0.31	----
2380	----	----	----	----	----	----
2384	< 10	< 50	< 50	< 5	0.60	< 10
2385	<0,5	5.4	<10	<0,5	<1	<0,1
2390	ND	ND	ND	0.12	0.03	ND
2413	----	----	----	----	----	----
2429	<1	<10	<50	<0.5	<5	<1
2431	----	----	----	----	0.2631	----
2432	----	6.65	7.11	----	----	----
2442	----	n.d.	8.00	----	----	----
2459	1.635	9.659	43.693	<0.1	3.682	<0.5
2475	----	----	----	----	----	----
2497	----	1.134	0.758	----	----	----
2499	----	10.849	19.715	----	0.398	0.269
2500	ND	ND	ND	ND	ND	ND
2549	<3	<10	<10	<1	<10	<5
2560	ND	ND	ND	ND	ND	ND
2561	3.08	1.45	1.29	0	0	0
2590	<L.O.Q.	8.101	6.410	<L.O.Q.	42.5	<L.O.Q.
2629	----	----	----	----	----	----
2637	<1	6	<10	0.12	<1	<0.1
2642	<10	<10	----	<10	<10	<5
2645	ND	ND	ND	ND	ND	ND
2650	<1	5.656	7.741	<1	<0.2	<1
2659	0.989	4.450	----	0.000	0.297	0.000
2662	<2	6.5	6.6	<2	<2	<2
2698	0.3610	6.5726	----	0.1211	----	----
2728	ND	ND	ND	ND	ND	ND
2741	0.26	<25	<25	<0.05	0.13	<0.1
2743	0.2204799	5.3486675	5.991079	0.1010081	0.3195219	nd
2766	----	36	----	----	----	----
3100	<1	<10	<50	<0.5	<5	<1
3110	0.40	<20	<100	<5	<1	<5
3116	----	----	----	----	----	----
3146	n.d.	n.d.	n.d.	0.140	n.d.	n.d.
3153	<1	<10	<50	<0.5	<5	<1
3167	ND	ND	ND	ND	ND	ND
3172	< 1	< 50	< 50	< 0.05	< 10	< 5
3176	0.046	12.872	12.433	0.370	0.387	0.005
3182	ND	ND	ND	ND	ND	ND
3185	<1.0	<10	<50	<0.5	<5.0	<1.0

lab	As	Ba	B	Cd	Cr	Hg
3197	ND	ND	ND	0.12	0.31	ND
3200	<1.0	<10.0	<10.0	<0.5	<1.0	<2.0
3209	<0.5	<10	<10	<0.1	<0.5	<1.0
3216	0.3707	4.0035	6.4939	0.0721	0.2922	nd
3218	<1.0	<10	<50	<0.5	<5	<1.0
3225	<10	<10	16.15	<10	<10	<10
3228	<0.5	6.0	<10	<0.1	<1.0	<0.5
3233	0.4901	6.9089	6.0736	0.1134	0.2872	< 0.5
3237	0.33	-----	-----	0.1	-----	-----
3238	0.19	5.2	5.8	0.10	0.22	-----
3243	n.d.	3.0	7.366	n.d.	n.d.	n.d.
3248	<10	<10	<100	<5	<0.12	<10

Lab 2294: first reported 70.592 (Ba), 56.047 (B), 2.953 (Cd)

Lab 2442: first reported 91.62

Lab 2497: first reported 80.588

Lab 2499: first reported 28.515

Lab 2561: first reported 95.43

Lab 2590: first reported 3.211

Determination of migration of Nickel, Selenium, Tin and Zinc on plaster/chalk sample #17555; results in mg/kg

lab	Ni	Se	Sn	Zn	
110	----	----	----	----	
310	0.32	0.473	0.009	3.58	
330	< 2	< 2	< 0.2	< 15	
551	ND	ND	ND	18.98	
622	0.8436	0.0486	208.1359	5.1448	
1051	----	----	----	----	
2115	0.25	0.47	----	3.20	
2118	0.20	0.38	0	2.39	
2129	<1	<5	<3	<10	
2132	<1.0	<1.0	<2.5	<50	
2139	< 10	< 10	< 10	< 10	
2156	0.15	0.10	0.10	4.55	
2165	ND	ND	ND	ND	
2172	<10	<10	<10	<10	
2184	----	----	----	----	
2190	<10	<5	<4	<50	
2201	<10	<5.0	<10	<100	
2213	<5	<5	<1	<5	
2232	ND	ND	ND	ND	
2236	<2.0	<2.0	<2.0	<50.0	
2241	0.295	0.432	0.000	2.717	
2246	<0.1	<0.1	<2.5	<50	
2256	----	----	----	----	
2284	----	----	----	----	
2290	<10	<5	<10	<100	
2293	----	ND	----	----	
2294	----	----	----	----	
2295	0.3	0.5	----	2.7	
2296	1.21	0	0	0.71	
2299	----	0.2288	----	----	
2301	2.1200	0	0	4.2400	
2303	0.26	1.24	0.17	3.24	
2330	----	----	----	----	
2370	<10	<5	<0.36	<50	
2372	<10	<5	<0.36	<50	
2375	----	----	----	----	
2380	----	----	----	----	
2384	< 10	< 10	< 4.9	< 50	
2385	<1	<5	<1	3.6	
2390	ND	ND	ND	ND	
2413	----	----	----	----	
2429	<10	<5	<10	<100	
2431	----	----	----	----	
2432	----	----	----	4.15	
2442	----	----	----	18.00	
2459	<0.1	<0.1	<1.0	24.480	
2475	----	----	----	----	
2497	0.168	----	----	0.757	
2499	0.454	----	----	5.766	
2500	ND	ND	ND	ND	
2549	<10	<10	<10	<10	
2560	ND	ND	ND	ND	
2561	1.66	0	0	0	
2590	<L.O.Q.	<L.O.Q.	<L.O.Q.	3.610	
2629	----	----	----	103.7	C
2637	<2	<2	<2	4	
2642	----	<10	----	----	
2645	ND	ND	ND	ND	
2650	<1	<1	<1	<1	
2659	----	0.000	----	----	
2662	<2	<2	<2	28.8	C
2698	0.3211	0.5070	----	----	
2728	ND	ND	ND	ND	
2741	<1	<1	<2.5	<50	
2743	0.5608273	0.3389159	<0.1	6.9098965	
2766	----	----	----	276	
3100	<10	<5	<10	<100	
3110	<5	<5	<2.5	<100	
3116	----	----	----	----	
3146	n.d.	n.d.	n.d.	n.d.	
3153	<10	<5	<10	<100	
3167	ND	ND	ND	ND	
3172	< 10	< 10	< 50	< 50	
3176	0.178	0.740	0.031	7.112	
3182	ND	ND	ND	ND	
3185	<10	<5	<10	<100	

lab	Ni	Se	Sn	Zn
3197	ND	ND	ND	ND
3200	<10.0	<5.0	<10.0	<10.0
3209	<1.0	<1.0	<10.0	<10.0
3216	0.4953	0.4155	nd	2.1756
3218	<10	<5	<10	<100
3225	<10	<10	<10	41.77
3228	<2.5	<2.5	<0.2	<10
3233	< 5	< 5	< 0.05	< 5
3237	----	----	----	----
3238	0.23	0.23	----	101.7
3243	n.d.	n.d.	3.7	7.5
3248	<10	<10	<0.8	<10

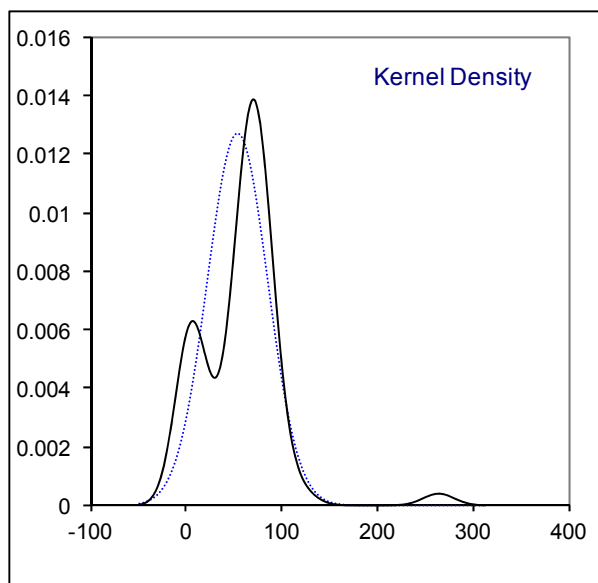
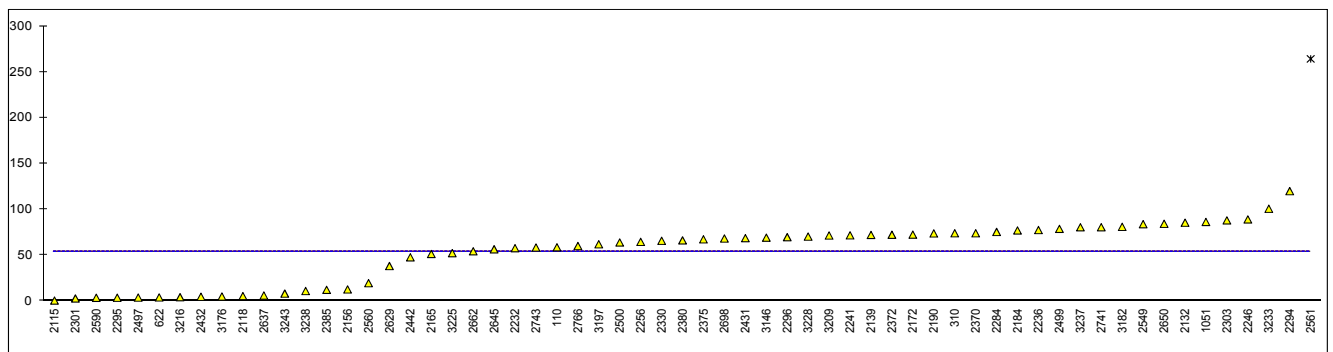
Lab 2629: first reported 60.95

Lab 2662: first reported 115

Determination of migration of Aluminium as Al on paper sample #17556; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	58.623		----	
310	EN71-3	73.90		----	
330	EN71-3	< 15		----	
551	EN71-3	ND		----	
622	EN71-3	3.8840		----	
1051	EN71-3	86.2705		----	
2115	EN71-3	0.51		----	
2118	EN71-3	5.37		----	
2129	EN71-3	<200		----	
2132	EN71-3	85.44		----	
2139	EN71-3	72.1		----	
2156	EN71-3	12.61		----	
2165	EN71-3	51.33		----	
2172	EN71-3	72.421		----	
2184	EN71-3	77.0		----	
2190	EN71-3	73.75		----	
2201	EN71-3	<300		----	
2213	EN71-3	<10		----	
2232	EN71-3	57.63		----	
2236	EN71-3	77.41		----	
2241	EN71-3	71.636		----	
2246	EN71-3	89.04		----	
2256	EN71-3	64.52		----	
2284	EN71-3	75.329		----	
2290	EN71-3	<300		----	
2293		----		----	
2294	EN71-3	119.858		----	
2295	EN71-3	3.6		----	
2296	EN71-3	69.67		----	
2299		----		----	
2301	EN71-3	2.7800		----	
2303	EN71-3	87.98		----	
2330	EN71-3	65.69		----	
2370	EN71-3	73.9		----	
2372	EN71-3	72.3		----	
2375	EN71-3	67.3		----	
2380	EN71-3	66.1699		----	
2384	EN71-3	< 50		----	
2385	EN71-3	12.2		----	
2390	EN71-3	ND		----	
2413		----		----	
2429		<300		----	
2431	EN71-3	68.6185		----	
2432	EN71-3	4.65		----	
2442		47.68		----	
2459	EN71-3	<1.0		----	
2475	EN71-3	<500		----	
2497	EN71-3	3.736		----	
2499	EN71-3	78.709		----	
2500	EN71-3	63.88		----	
2549	EN71-3	83.84		----	
2560	EN71-3	19.4903		----	
2561	EN71-3	264.15	C,R(0.01)	----	First reported 273.72
2590	EN71-3	3.510		----	
2629	EN71-3	38.145		----	
2637		6		----	
2642		----		----	
2645	EN71-3	56.42		----	
2650	In house	84.251		----	
2659		----		----	
2662	EN71-3	54.3		----	
2698	EN71-3	68.2104		----	
2728	ISO8124-3	ND		----	
2741	EN71-3	80.5		----	
2743	EN71-3	58.355897		----	
2766	EN71-3	60		----	
3100	EN71-3	<300		----	
3110	EN71-3	<100		----	
3116		----		----	
3146	EN71-3	69.1		----	
3153	EN71-3	<300		----	
3167		ND		----	
3172		< 50		----	
3176	EN71-3	4.92	C	----	First reported 556.492
3182	EN71-3	80.93		----	
3185	EN71-3	<300		----	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	61.9		----	
3200	EN71-3	<100.0		----	
3209	EN71-3	71.5		----	
3216	EN71-3	4.1579		----	
3218	EN71-3	<300		----	
3225	EN71-3	52.23		----	
3228	EN71-3	70.3		----	
3233	EN71-3	100.6595		----	
3237	EN71-3	80.47		----	
3238	EN71-3	10.9		----	
3243	EN71-3	8.059		----	
3248	EN71-3	<100		----	
normality		OK			
n		60			
outliers		1			
mean (n)		54.094			
st.dev. (n)		(31.4392)			
R(calc.)		(88.030)			
R(RR prEN71-3:13)		(104.510)			

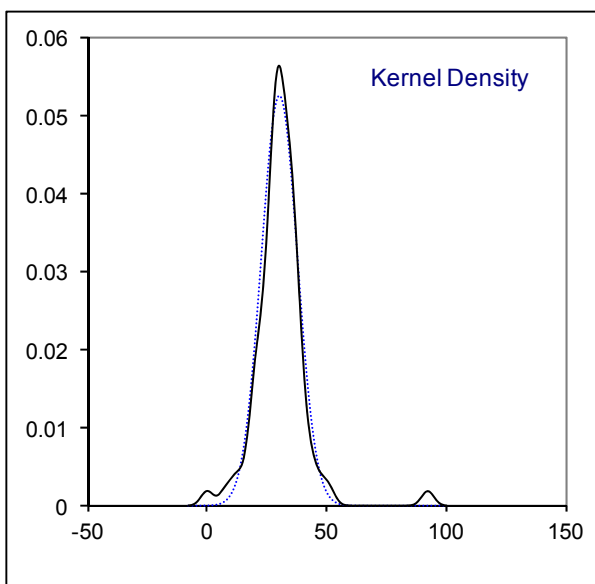
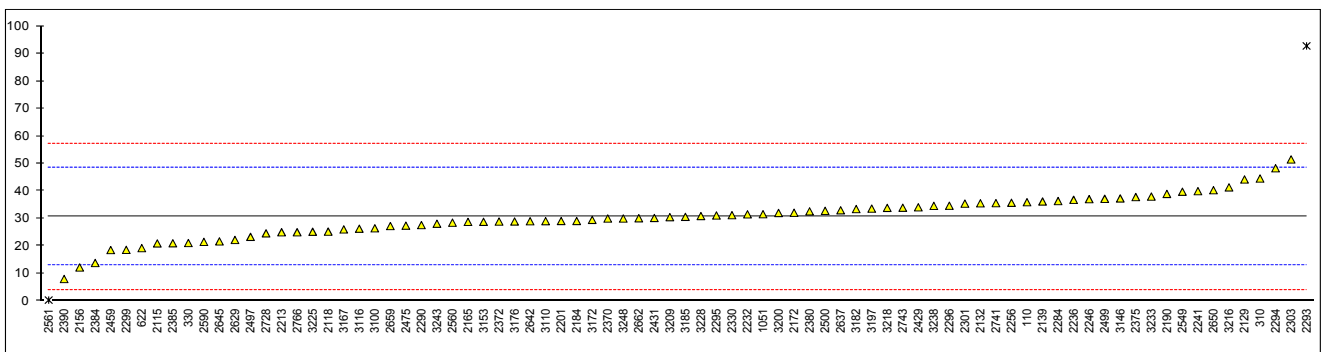


Determination of migration of Chromium as Cr on paper sample #17556; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	35.927		0.60	
310	EN71-3	44.55		1.57	
330	EN71-3	21.081		-1.07	
551	EN71-3	ND		----	
622	EN71-3	19.2338		-1.28	
1051	EN71-3	31.5588		0.11	
2115	EN71-3	20.95		-1.09	
2118	EN71-3	25.24		-0.60	
2129	EN71-3	44.2		1.53	
2132	EN71-3	35.53		0.56	
2139	EN71-3	36.2		0.63	
2156	EN71-3	12.20		-2.07	
2165	EN71-3	28.77		-0.21	
2172	EN71-3	32.098		0.17	
2184	EN71-3	29.1		-0.17	
2190	EN71-3	38.95		0.94	
2201	EN71-3	29.1		-0.17	
2213	EN71-3	25		-0.63	
2232	EN71-3	31.52		0.10	
2236	EN71-3	36.80		0.70	
2241	EN71-3	39.945		1.05	
2246	EN71-3	37.04		0.73	
2256	EN71-3	35.73		0.58	
2284	EN71-3	36.345		0.65	
2290	EN71-3	27.6		-0.34	
2293	EN71-3	92.77	R(0.01)	7.01	
2294	EN71-3	48.281		1.99	
2295	EN71-3	31.1		0.06	
2296	EN71-3	34.65		0.46	
2299	NTP324.001-3	18.5858		-1.35	
2301	EN71-3	35.4200		0.54	
2303	EN71-3	51.49		2.35	
2330	EN71-3	31.21		0.07	
2370	EN71-3	30.0		-0.07	
2372	EN71-3	28.9		-0.19	
2375	EN71-3	37.8		0.81	
2380	EN71-3	32.5998		0.23	
2384	EN71-3	13.83		-1.89	
2385	EN71-3	21		-1.08	
2390	EN71-3	8.0		-2.55	
2413		----		----	
2429	----	34.08		0.39	
2431	EN71-3	30.2056		-0.04	
2432		----		----	
2442		----		----	
2459	EN71-3	18.522		-1.36	
2475	EN71-3	27.4		-0.36	
2497	EN71-3	23.33		-0.82	
2499	EN71-3	37.171		0.74	
2500	EN71-3	32.79		0.25	
2549	EN71-3	39.75		1.03	
2560	EN71-3	28.4858		-0.24	
2561	EN71-3	0.33	R(0.05)	-3.41	
2590	EN71-3	21.503		-1.03	
2629	EN71-3	22.215		-0.94	
2637	----	33		0.27	
2642	ASTM F963	29		-0.18	
2645	EN71-3	21.69		-1.00	
2650	In house	40.296		1.09	
2659	ISO8124-3	27.252		-0.38	
2662	EN71-3	30.1		-0.06	
2698		----		----	
2728	ISO8124-3	24.61		-0.67	
2741	EN71-3	35.6		0.56	
2743	EN71-3	33.930865		0.38	
2766	EN71-3	25.0		-0.63	
3100	EN71-3	26.44162		-0.47	
3110	EN71-3	29.05		-0.17	
3116	EN71-3	26.3		-0.48	
3146	EN71-3	37.3		0.76	
3153	EN71-3	28.8		-0.20	
3167	----	26.04		-0.51	
3172	----	29.50		-0.12	
3176	EN71-3	28.913		-0.19	
3182	EN71-3	33.43		0.32	
3185	EN71-3	30.6		0.00	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	33.6		0.34	
3200	EN71-3	32.02		0.16	
3209	EN71-3	30.5		-0.01	
3216	EN71-3	41.3309		1.21	
3218	EN71-3	33.87		0.37	
3225	EN71-3	25.19		-0.61	
3228	EN71-3	30.9		0.03	
3233	EN71-3	37.9847		0.83	
3237		----		----	
3238	EN71-3	34.6		0.45	
3243	EN71-3	28.1		-0.28	
3248	EN71-3	30		-0.07	

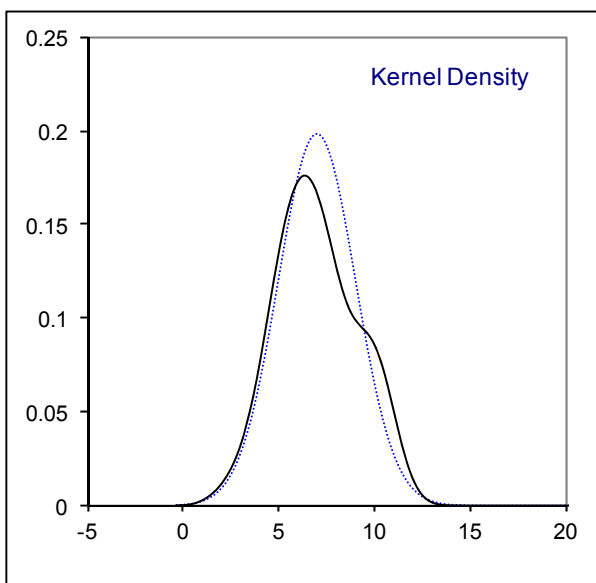
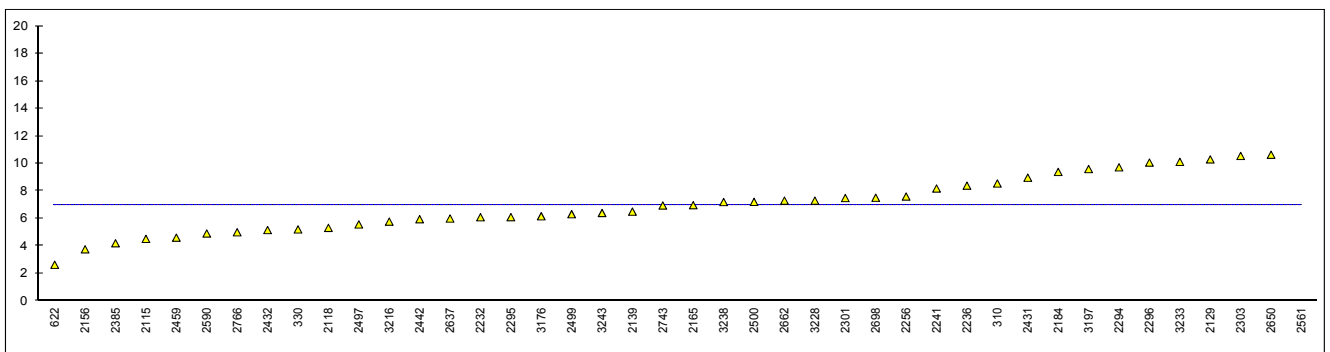
normality OK
 n 80
 outliers 2
 mean (n) 30.599
 st.dev. (n) 7.5797
 R(calc.) 21.223
 R(RR prEN71-3:13) 24.847



Determination of migration of Manganese as Mn on paper sample #17556; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110		----		----	
310	EN71-3	8.547		----	
330	EN71-3	5.208		----	
551	EN71-3	ND		----	
622	EN71-3	2.6365		----	
1051	EN71-3	<10		----	
2115	EN71-3	4.52		----	
2118	EN71-3	5.32		----	
2129	EN71-3	10.3		----	
2132	EN71-3	<25		----	
2139	EN71-3	6.5		----	
2156	EN71-3	3.76		----	
2165	EN71-3	6.97		----	
2172	EN71-3	<10		----	
2184	EN71-3	9.39		----	
2190	EN71-3	<50		----	
2201	EN71-3	<10		----	
2213	EN71-3	<10		----	
2232	EN71-3	6.092		----	
2236	EN71-3	8.39		----	
2241	EN71-3	8.185		----	
2246	EN71-3	<25		----	
2256	EN71-3	7.60		----	
2284	EN71-3	ND		----	
2290	EN71-3	<10		----	
2293		----		----	
2294	EN71-3	9.724		----	
2295	EN71-3	6.1		----	
2296	EN71-3	10.07		----	
2299		----		----	
2301	EN71-3	7.4900		----	
2303	EN71-3	10.55		----	
2330	EN71-3	ND		----	
2370	EN71-3	<50		----	
2372	EN71-3	<50		----	
2375		----		----	
2380		----		----	
2384	EN71-3	< 50		----	
2385	EN71-3	4.2		----	
2390	EN71-3	ND		----	
2413		----		----	
2429	----	<10		----	
2431	EN71-3	8.9697		----	
2432	EN71-3	5.16		----	
2442	EN71-3	5.95		----	
2459	EN71-3	4.608		----	
2475	EN71-3	<500		----	
2497	EN71-3	5.571		----	
2499	EN71-3	6.313		----	
2500	EN71-3	7.21		----	
2549	EN71-3	<10		----	
2560	EN71-3	ND		----	
2561	EN71-3	67.95	C,R(0.01)	----	First reported 71.17
2590	EN71-3	4.910		----	
2629		----		----	
2637	----	6		----	
2642	ASTM F963	----		----	
2645	EN71-3	ND		----	
2650	In house	10.637		----	
2659		----		----	
2662	EN71-3	7.3		----	
2698	EN71-3	7.5111		----	
2728	ISO8124-3	ND		----	
2741	EN71-3	<25		----	
2743	EN71-3	6.9468396		----	
2766	EN71-3	5.0		----	
3100	EN71-3	<10		----	
3110	EN71-3	<100		----	
3116		----		----	
3146	EN71-3	n.d.		----	
3153	EN71-3	<10		----	
3167	----	ND		----	
3172	----	< 50		----	
3176	EN71-3	6.166		----	
3182	EN71-3	ND		----	
3185	EN71-3	<10		----	

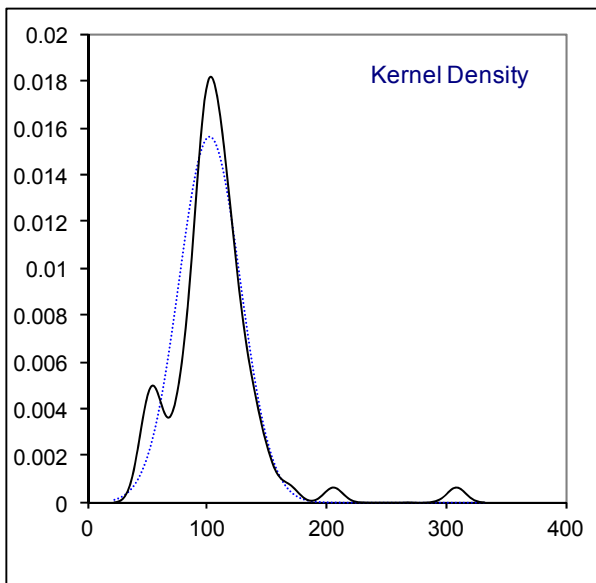
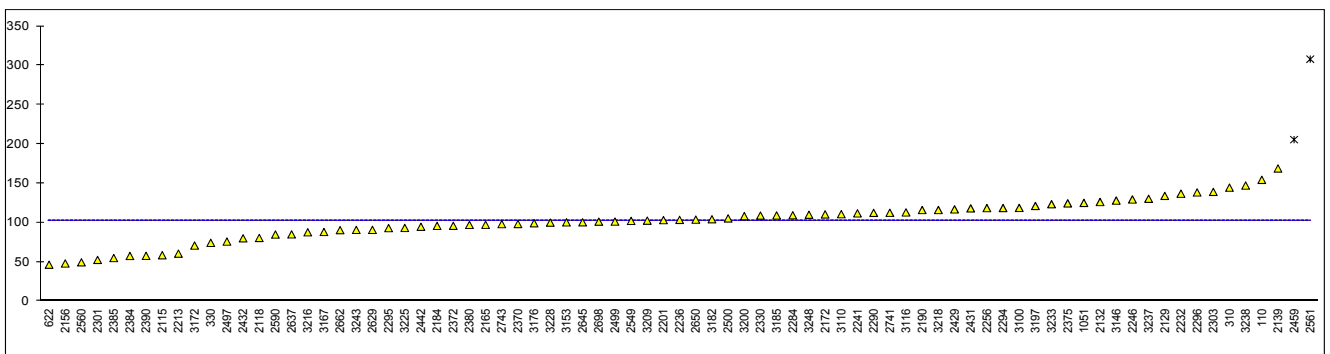
lab	method	value	mark	z(targ)	remarks
3197	EN71-3	9.6		----	
3200	EN71-3	<10.0		----	
3209	EN71-3	<10.0		----	
3216	EN71-3	5.7743		----	
3218	EN71-3	<10		----	
3225	EN71-3	<10		----	
3228	EN71-3	7.3		----	
3233	EN71-3	10.1219		----	
3237		----		----	
3238	EN71-3	7.2		----	
3243	EN71-3	6.4		----	
3248	EN71-3	<10		----	
normality		OK			
n		41			
outliers		1			
mean (n)		6.981			
st.dev. (n)		(2.0162)			
R(calc.)		(5.645)			
R(RR prEN71-3:13)		(4.691)			



Determination of migration of Strontium as Sr on paper sample #17556; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	154.447		----	
310	EN71-3	144.5		----	
330	EN71-3	74.292		----	
551	EN71-3	NA		----	
622	EN71-3	46.4071		----	
1051	EN71-3	125.0933		----	
2115	EN71-3	58.50		----	
2118	EN71-3	80.48		----	
2129	EN71-3	134		----	
2132	EN71-3	126.23		----	
2139	EN71-3	168.9		----	
2156	EN71-3	48.00		----	
2165	EN71-3	97.27		----	
2172	EN71-3	110.441		----	
2184	EN71-3	95.8		----	
2190	EN71-3	115.97		----	
2201	EN71-3	103.2		----	
2213	EN71-3	60.52		----	
2232	EN71-3	136.8		----	
2236	EN71-3	103.5		----	
2241	EN71-3	111.774		----	
2246	EN71-3	129.48		----	
2256	EN71-3	118.45		----	
2284	EN71-3	109.3842		----	
2290	EN71-3	112.4		----	
2293		----		----	
2294	EN71-3	118.534		----	
2295	EN71-3	93		----	
2296	EN71-3	138.38		----	
2299		----		----	
2301	EN71-3	52.5400		----	
2303	EN71-3	139.11		----	
2330	EN71-3	108.96		----	
2370	EN71-3	98.2		----	
2372	EN71-3	95.9		----	
2375	EN71-3	124.5		----	
2380	EN71-3	97.0893		----	
2384	EN71-3	57.51		----	
2385	EN71-3	54.9		----	
2390	EN71-3	57.70		----	
2413		----		----	
2429	----	116.86		----	
2431	EN71-3	118.157		----	
2432	EN71-3	80.03		----	
2442	EN71-3	94.72		----	
2459	EN71-3	205.610	R(0.05)	----	
2475	EN71-3	<500		----	
2497	EN71-3	75.861		----	
2499	EN71-3	101.299		----	
2500	EN71-3	105.35		----	
2549	EN71-3	102.16		----	
2560	EN71-3	49.4753		----	
2561	EN71-3	308.06	C,R(0.01)	----	First reported 393.73
2590	EN71-3	84.812		----	
2629	EN71-3	90.76		----	
2637	----	85		----	
2642		----		----	
2645	EN71-3	100.43		----	
2650	In house	103.797		----	
2659		----		----	
2662	EN71-3	90.4		----	
2698	EN71-3	101.2004		----	
2728	ISO8124-3	ND		----	
2741	EN71-3	112.5		----	
2743	EN71-3	98.073097		----	
2766		----		----	
3100	EN71-3	118.68387		----	
3110	EN71-3	110.75		----	
3116	EN71-3	113		----	
3146	EN71-3	128		----	
3153	EN71-3	100.3		----	
3167	----	88.06		----	
3172	----	70.8		----	
3176	EN71-3	99.243		----	
3182	EN71-3	104.29		----	
3185	EN71-3	109.1		----	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	121.2		----	
3200	EN71-3	108.25		----	
3209	EN71-3	102.5		----	
3216	EN71-3	87.6729		----	
3218	EN71-3	116.04		----	
3225	EN71-3	93.23		----	
3228	EN71-3	100		----	
3233	EN71-3	123.4202		----	
3237	EN71-3	130.33		----	
3238	EN71-3	147.2		----	
3243	EN71-3	90.7		----	
3248	EN71-3	110		----	
normality		OK			
n		77			
outliers		2			
mean (n)		102.413			
st.dev. (n)		(25.4832)			
R(calc.)		(71.353)			
R(RR prEN71-3:13)		(45.881)			



Determination of migration of Antimony, Arsenic, Barium, Boron, Cadmium and Cobalt on paper sample #17556; results in mg/kg

lab	Sb	As	Ba	B	Cd	Co
110	----	----	----	----	----	----
310	0.035	0.078	4.984	0.533	0.011	0.022
330	< 2	< 0.5	< 15	< 15	< 0.2	< 2
551	ND	ND	ND	NA	ND	ND
622	0.0525	0.0480	2.3659	0.5346	0.0312	0.0000
1051	<5	<5	<10	<10	<2	<5
2115	----	----	2.48	----	----	----
2118	0	0.113	2.67	0	0	0.023
2129	<1	<0,3	<10	<10	<0,1	<0,1
2132	<10	<2.5	<25	<25	<10	<10
2139	< 10	< 10	< 10	< 10	< 10	< 10
2156	0.10	0.33	2.42	0.10	0.10	0.10
2165	ND	ND	ND	ND	ND	ND
2172	<10	<10	<10	<10	<10	<10
2184	----	----	2.81	----	----	----
2190	<10	<2	<50	<50	<0.5	<2
2201	<10	<10	<10	<50	<5	<10
2213	<10	<10	<10	<10	<0.1	<1
2232	ND	ND	4.291	ND	ND	0.8544
2236	<2.2	<2.2	4.06	<2.2	<1.0	<2.2
2241	0.053	0.213	3.898	0.531	0.008	0.037
2246	<10	<2.5	<25	<25	<1.0	<10
2256	----	----	----	----	----	----
2284	ND	ND	ND	ND	ND	ND
2290	<10	<10	<10	<50	<5	<10
2293	2.67	1.59	12.31	----	ND	----
2294	0.241	0.156	4.380	9.149	0.062	0.072
2295	----	----	2.7	----	----	0.3
2296	0	0	7.51	0.10	0.10	0
2299	0.0831	0.0729	2.3163	----	0.0195	----
2301	0	0	3.1400	0	0	0
2303	0.089	0.46	5.33	2.08	0.02	0.11
2330	ND	ND	ND	ND	ND	ND
2370	<10	<10	<50	<50	<5	<10
2372	<10	<10	<50	<50	<5	<10
2375	----	----	----	----	----	----
2380	----	----	----	----	----	----
2384	< 10	< 10	< 50	< 50	< 5	< 10
2385	<1	<0,5	2.3	<10	<0,5	<1
2390	ND	ND	ND	ND	ND	ND
2413	----	----	----	----	----	----
2429	<10	<10	<10	<50	<5	<10
2431	----	----	----	----	----	----
2432	----	----	2.66	----	----	----
2442	----	----	n.d.	----	----	----
2459	<1.0	<0.5	<5.0	<5.0	<0.1	<1.0
2475	<50	<1	<500	<50	<1	<50
2497	----	----	2.618	0.408	----	----
2499	----	----	3.180	2.216	----	0.073
2500	ND	ND	ND	ND	ND	ND
2549	<10	<3	<10	<10	<1	<10
2560	ND	ND	ND	ND	ND	ND
2561	10.11	3.08	5.47	7.39	0.12	1.14
2590	<L.O.Q.	<L.O.Q.	4.102	----	<L.O.Q.	<L.O.Q.
2629	----	----	----	----	----	----
2637	<0.5	<1	3	<10	<0.1	<1
2642	<10	<10	<10	----	<10	----
2645	ND	ND	ND	ND	ND	ND
2650	<1	<1	5.414	<1	<1	<1
2659	0.891	0.000	3.441	----	0.000	----
2662	<2	<2	4.1	<2	<2	<2
2698	----	----	3.4618	----	----	----
2728	ND	ND	ND	ND	ND	ND
2741	<10	<2.5	<25	<25	<1	<10
2743	nd	nd	17.461203	2.9396046	nd	0.1813356
2766	----	----	3.0	----	----	----
3100	<10	<10	<10	<50	<5	<10
3110	<5	<5	<20	<100	<5	<5
3116	----	----	----	----	----	----
3146	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3153	<10	<10	<10	<50	<5	<10
3167	ND	ND	ND	ND	ND	ND
3172	< 10	< 10	< 50	< 50	< 2	< 10
3176	0.034	0.062	3.148	0.165	0.005	0.028
3182	ND	ND	ND	ND	ND	ND
3185	<10	<10	<10	<50	<5	<10

lab	Sb	As	Ba	B	Cd	Co
3197	ND	ND	ND	ND	ND	ND
3200	<5.0	<1.0	<10.0	<10.0	<0.5	<2.0
3209	<5.0	<5.0	<10.0	<50.0	<5.0	<10.0
3216	0.0157	0.1371	2.4190	nd	nd	0.0410
3218	<10	<10	<10	<50	<5	<10
3225	<10	<10	<10	n.d.	<10	<10
3228	<5	<5	3.3	<10	<1.0	<2.5
3233	< 5	< 0.5	< 5	< 5	< 0.5	< 0.5
3237	----	----	----	----	----	----
3238	----	0.06	3.8	0.58	0.004	0.03
3243	n.d.	n.d.	4.468	n.d.	n.d.	n.d.
3248	<10	<10	<10	<100	<5	<10

Lab 551: first reported 30.1

Lab 1051: first reported 13.5183

Lab 2294: first reported 15.127

Lab 2301: first reported 11.5100

Lab 2442: first reported 34.58

Lab 3225: first reported 14.14

Determination of migration of Copper, Lead, Mercury, Nickel, Selenium, Tin and Zinc on paper sample #17556; results in mg/kg

lab	Cu	Pb	Hg	Ni	Se	Sn	Zn
110	----	----	----	----	----	----	----
310	0.465	0.338	0.001	0.161	0.008	0.024	3.639
330	< 2	< 1	< 0.5	< 2	< 2	< 0.2	< 15
551	ND	ND	ND	ND	ND	ND	ND
622	0.0737	0.0000	0.0000	0.0000	0.0000	0.0000	0.4021
1051	<10	<5	<5	<5	<10	<2.5	<10
2115	----	----	----	----	----	C	1.25
2118	0.28	0	0	0.11	0	0	0.63
2129	<10	<2	<0,1	<1	<5	<3	<10
2132	<15	<10	<10	<10	<10	<2.5	<50
2139	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2156	0.35	0.09	0.10	0.12	0.10	0.10	1.28
2165	ND	ND	ND	ND	ND	ND	ND
2172	<10	<10	<10	<10	<10	<10	<10
2184	----	----	----	----	----	----	----
2190	<50	<2	<5	<50	<50	<4	<50
2201	<10	<10	<10	<10	<10	<10	<100
2213	<10	<10	<1	<10	<10	<1	<10
2232	ND	ND	ND	ND	ND	ND	ND
2236	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<50.0
2241	0.453	0.182	0.000	0.211	0.021	0.011	3.639
2246	<15	<10	<10	<10	<10	<2.5	<50
2256	----	----	----	----	----	----	7.28
2284	ND	ND	ND	ND	ND	ND	ND
2290	<10	<10	<10	<10	<10	<10	<100
2293	----	ND	ND	----	ND	----	----
2294	1.017	1.116	ND	3.650	0.780	19.925	14.985
2295	0.6	----	----	0.2	----	----	0.8
2296	1.35	5.95	0	0	0	0	9.41
2299	----	0.7458	0.0460	----	0.0768	----	----
2301	0	0	0	4.0600	0	0	0
2303	2.60	0.69	0.0011	0.70	0.60	1.15	5.50
2330	ND	ND	ND	ND	ND	ND	ND
2370	<50	<10	<10	<10	<10	<4.9	<50
2372	<50	<10	<10	<10	<10	<4.9	<50
2375	----	----	----	----	----	----	----
2380	----	----	----	----	----	----	----
2384	< 50	< 10	< 10	< 10	< 10	< 4.9	< 50
2385	<1	<1	<0,1	<1	<5	<1	1.2
2390	ND	ND	ND	ND	ND	ND	ND
2413	----	----	----	----	----	----	----
2429	<10	<10	<10	<10	<10	<10	<100
2431	----	----	----	----	----	----	----
2432	----	----	----	----	----	----	----
2442	----	----	----	----	----	----	----
2459	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	5.284
2475	<50	<1	<1	<50	<1	<1	<500
2497	0.271	----	----	5.69	----	----	1.289
2499	0.821	----	0.141	0.194	----	----	11.658
2500	ND	ND	ND	ND	ND	ND	6.78
2549	<10	<10	<5	<10	<10	<10	<10
2560	ND	ND	ND	ND	ND	ND	ND
2561	32.51	44.33	0	1.41	0.47	0	5.27
2590	<L.O.Q.	<L.O.Q.	<L.O.Q.	<L.O.Q.	<L.O.Q.	<L.O.Q.	0.901
2629	----	----	----	----	----	----	80.82
2637	<1	<0.2	<0.1	<2	<2	<2	1
2642	----	<10	<5	----	<10	----	----
2645	ND	ND	ND	ND	ND	ND	ND
2650	<1	<1	<1	<1	<1	<1	1.173
2659	----	0.000	0.000	----	0.074	----	----
2662	3.0	2.4	<2	<2	<2	<2	5.7
2698	0.2530	----	----	----	----	----	7.3511
2728	ND	ND	ND	ND	ND	ND	ND
2741	<15	<10	<10	<10	<10	<2.5	<50
2743	2.4386683	0.4870418	nd	0.1893506	nd	nd	7.8939463
2766	2.0	----	----	----	----	----	10.0
3100	<10	<10	<10	<10	<10	<10	<100
3110	<5	<5	<5	<5	<5	<2.5	<100
3116	----	----	----	----	----	----	----
3146	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3153	<10	<10	<10	<10	<10	<10	<100
3167	ND	ND	ND	ND	ND	ND	ND
3172	< 50	< 10	< 10	< 10	< 10	< 50	< 50
3176	0.327	nd	nd	nd	nd	nd	2.071
3182	ND	ND	ND	ND	ND	ND	ND
3185	<10	<10	<10	<10	<10	<10	<100

lab	Cu	Pb	Hg	Ni	Se	Sn	Zn
3197	ND	0.25	ND	ND	ND	ND	ND
3200	<10.0	<2.0	<2.0	<10.0	<5.0	<10.0	<10.0
3209	<50.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
3216	0.1297	nd	nd	0.5500	nd	nd	0.2713
3218	<10	<10	<10	<10	<10	<10	<100
3225	<10	<10	<10	<10	<10	<10	<10
3228	<2.5	<2.5	<2.5	<2.5	<10	<1.0	<10
3233	< 5	< 0.5	< 0.5	< 5	< 5	< 0.5	7.3478
3237	----	----	----	----	----	----	----
3238	0.15	----	----	0.14	----	----	1.46
3243	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3248	<10	<10	<10	<10	<10	<0.8	<10

Lab 1051: first reported 20.9149

Lab 2294: first reported 27.142

Lab 2442: first reported 13.09

Lab 2561: first reported 34.02 (Cu), 46.31 (Pb)

Lab 2629: first reported 55.325

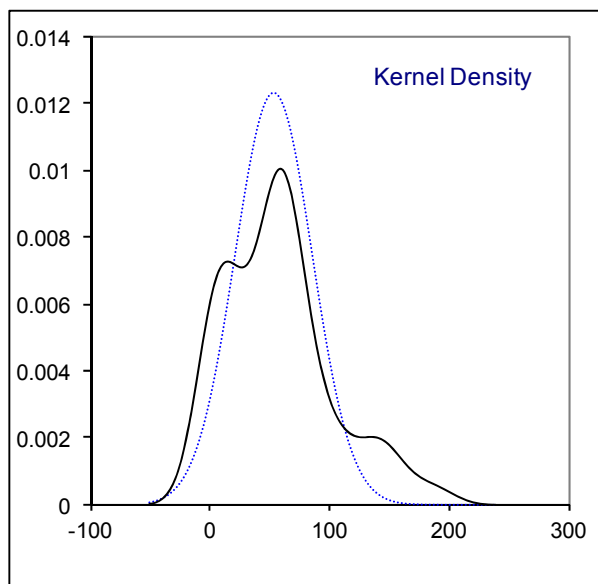
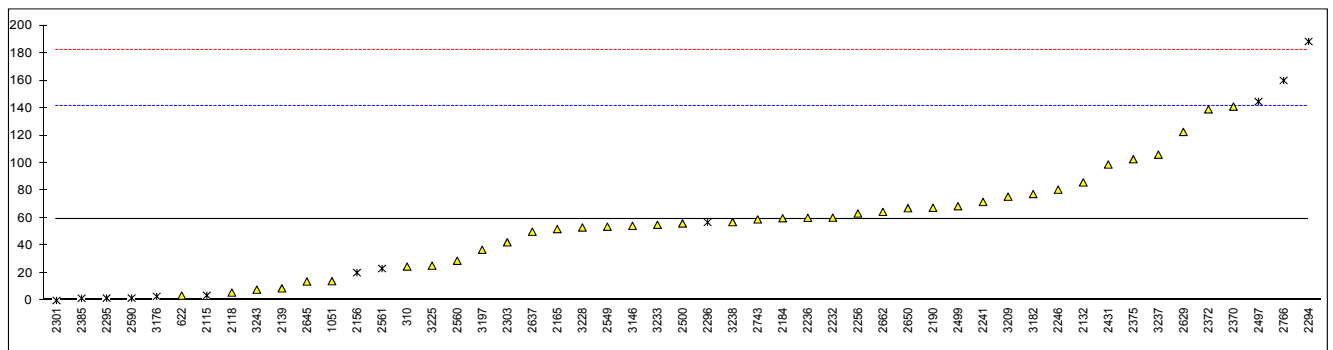
Lab 3243: first reported 17.3

Determination of migration of Aluminium as Al on dried paint sample #17557; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	----		----	
310	EN71-3	24.67		-0.85	
330	EN71-3	< 15		----	
551	EN71-3	ND		----	
622	EN71-3	3.5495		-1.36	
1051	EN71-3	14.0000		-1.11	
2115	EN71-3	3.67	ex	-1.36	
2118	EN71-3	5.75		-1.31	
2129	EN71-3	<200		----	
2132	EN71-3	85.87		0.65	
2139	EN71-3	8.8		-1.23	
2156	EN71-3	20.21	ex	-0.96	
2165	EN71-3	51.92		-0.18	
2172	EN71-3	----		----	
2184	EN71-3	59.8		0.01	
2190	EN71-3	67.42		0.20	
2201	EN71-3	<300		----	
2213	EN71-3	<10		----	
2232	EN71-3	60.21		0.02	
2236	EN71-3	60.13		0.02	
2241	EN71-3	71.662		0.30	
2246	EN71-3	80.61		0.52	
2256	EN71-3	63.24		0.10	
2284	EN71-3	ND		----	
2290	EN71-3	<100		----	
2293		----		----	
2294	EN71-3	188.360	C,G(0.05)	3.15	First reported 250.993
2295	EN71-3	1.7	ex	-1.41	
2296	EN71-3	56.81	ex	-0.06	
2299		----		----	
2301	EN71-3	0	ex	-1.45	Result excluded, zero is not a real result
2303	EN71-3	42.28		-0.42	
2330	EN71-3	ND		----	
2370	EN71-3	141		1.99	
2372	EN71-3	139		1.95	
2375	EN71-3	102.7		1.06	
2380	EN71-3	----		----	
2384	EN71-3	< 50		----	
2385	EN71-3	1.6	ex	-1.41	
2390	EN71-3	ND		----	
2413		----		----	
2429		<300		----	
2431	EN71-3	98.9053		0.97	
2432	EN71-3	----		----	
2442	EN71-3	----		----	
2459	EN71-3	<1.0		----	
2475	EN71-3	<500		----	
2497	EN71-3	144.661	ex	2.08	
2499	EN71-3	68.541		0.22	
2500	EN71-3	56.01		-0.08	
2549	EN71-3	53.67		-0.14	
2560	EN71-3	28.8845		-0.74	
2561	EN71-3	23.21	ex	-0.88	
2590	EN71-3	1.701	ex	-1.41	
2629	EN71-3	122.6		1.55	
2637	----	50		-0.23	
2642		----		----	
2645	EN71-3	13.77		-1.11	
2650	In house	67.098		0.19	
2659		----		----	
2662	EN71-3	64.4		0.12	
2698	EN71-3	----		----	
2728	ISO8124-3	ND		----	
2741	EN71-3	<50		----	
2743	EN71-3	58.933916		-0.01	
2766	EN71-3	160.0	ex	2.46	
3100	EN71-3	<300		----	
3110	EN71-3	<100		----	
3116		----		----	
3146	EN71-3	54.3		-0.12	
3153	EN71-3	<300		----	
3167	----	ND		----	
3172	----	< 50		----	
3176	EN71-3	2.933	ex	-1.38	
3182	EN71-3	77.406		0.44	
3185	EN71-3	<300		----	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	36.9		-0.55	
3200	EN71-3	<100.0		----	
3209	EN71-3	75.5		0.39	
3216	EN71-3	nd		----	
3218	EN71-3	<300		----	
3225	EN71-3	25.32		-0.83	
3228	EN71-3	53.1		-0.15	
3233	EN71-3	55.0293		-0.11	
3237	EN71-3	106.07		1.14	
3238	EN71-3	57		-0.06	
3243	EN71-3	7.857		-1.26	
3248	EN71-3	<100		----	
normality		OK			
n		39			
outliers		1 (+11 excl)			
mean (n)		59.331			
st.dev. (n)		34.2093			
R(calc.)		95.786			
R(RR prEN71-3:13)		114.627			

See for excluded test results the discussion in §5



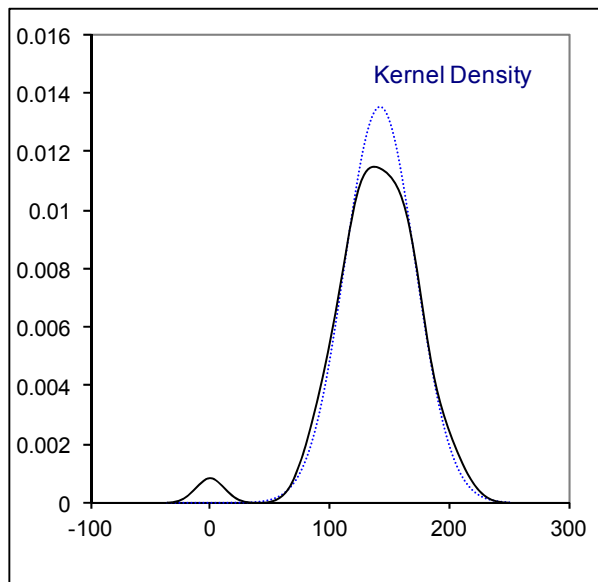
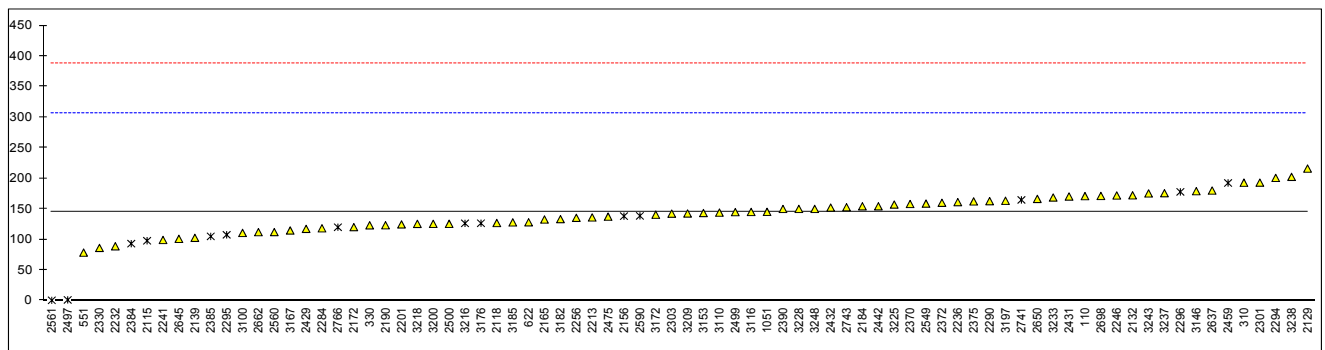
Determination of migration of Cobalt as Co on dried paint sample #17557; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	170.945		0.32	
310	EN71-3	192.9	C	0.59	First reported 0
330	EN71-3	123.138		-0.27	
551	EN71-3	78.44		-0.82	
622	EN71-3	128.0953		-0.21	
1051	EN71-3	145.1826		0.00	
2115	EN71-3	97.84	ex	-0.58	
2118	EN71-3	126.91		-0.22	
2129	EN71-3	216		0.88	
2132	EN71-3	172.25		0.34	
2139	EN71-3	102.6		-0.52	
2156	EN71-3	138.15	ex	-0.08	
2165	EN71-3	132.62		-0.15	
2172	EN71-3	120.143		-0.31	
2184	EN71-3	154.3		0.12	
2190	EN71-3	123.27		-0.27	
2201	EN71-3	124.6		-0.25	
2213	EN71-3	136		-0.11	
2232	EN71-3	88.82		-0.69	
2236	EN71-3	161.1		0.20	
2241	EN71-3	99.179		-0.56	
2246	EN71-3	172.0		0.33	
2256	EN71-3	135.41		-0.12	
2284	EN71-3	118.234		-0.33	
2290	EN71-3	162.7		0.22	
2293		----		----	
2294	EN71-3	200.689		0.69	
2295	EN71-3	107.6	ex	-0.46	
2296	EN71-3	177.83	ex	0.41	
2299		----		----	
2301	EN71-3	192.9700		0.59	
2303	EN71-3	142.23		-0.03	
2330	EN71-3	86.16		-0.72	
2370	EN71-3	158		0.16	
2372	EN71-3	160		0.19	
2375	EN71-3	162.3		0.21	
2380	EN71-3	----		----	
2384	EN71-3	93.05	ex	-0.64	
2385	EN71-3	105	ex	-0.49	
2390	EN71-3	149.90		0.06	
2413		----		----	
2429		117.26		-0.34	
2431	EN71-3	170.2862		0.31	
2432	EN71-3	152.17		0.09	
2442	EN71-3	154.30		0.12	
2459	EN71-3	192.410	ex	0.58	
2475	EN71-3	137.3		-0.09	
2497	EN71-3	1.02	C,ex	-1.77	First reported 0.577
2499	EN71-3	144.738		0.00	
2500	EN71-3	125.62		-0.24	
2549	EN71-3	158.65		0.17	
2560	EN71-3	112.0518		-0.41	
2561	EN71-3	0.37	ex	-1.78	
2590	EN71-3	138.611	ex	-0.08	
2629	EN71-3	----		----	
2637		180		0.43	
2642		----		----	
2645	EN71-3	101.00		-0.54	
2650	In house	166.363		0.26	
2659		----		----	
2662	EN71-3	111.9		-0.41	
2698	EN71-3	171.2011		0.32	
2728	ISO8124-3	ND		----	
2741	EN71-3	164.7	ex	0.24	
2743	EN71-3	152.71858		0.10	
2766	EN71-3	120.0	ex	-0.31	
3100	EN71-3	110.65737		-0.42	
3110	EN71-3	143.90		-0.01	
3116	EN71-3	145		0.00	
3146	EN71-3	179		0.42	
3153	EN71-3	143.2		-0.02	
3167		114.7		-0.37	
3172		140.5		-0.05	
3176	EN71-3	126.568	ex	-0.23	
3182	EN71-3	133.266		-0.14	
3185	EN71-3	127.9		-0.21	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	163.3		0.23	
3200	EN71-3	125.53		-0.24	
3209	EN71-3	142.5		-0.03	
3216	EN71-3	126.3847	ex	-0.23	
3218	EN71-3	125.50		-0.24	
3225	EN71-3	157.11		0.15	
3228	EN71-3	150		0.06	
3233	EN71-3	168.6150		0.29	
3237	EN71-3	175.73		0.38	
3238	EN71-3	202.4		0.71	
3243	EN71-3	175.3		0.37	
3248	EN71-3	150		0.06	

normality OK
 n 66
 outliers 0 (+14excl)
 mean (n) 144.951
 st.dev. (n) 28.8990
 R(calc.) 80.917
 R(RR prEN71-3:13) 227.283

See for excluded test results the discussion in §5



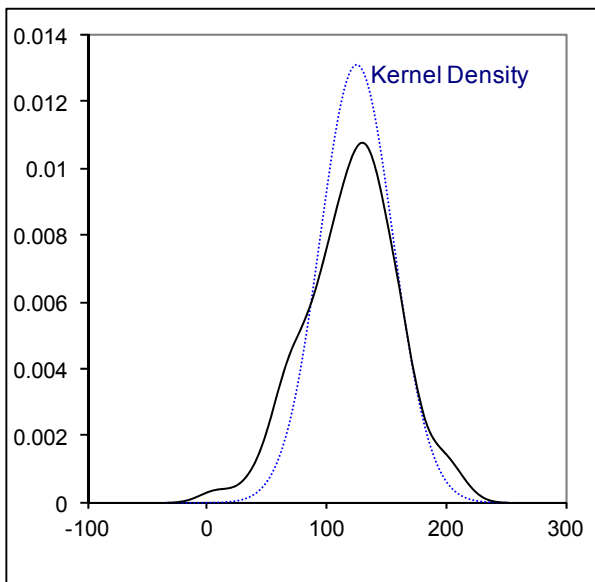
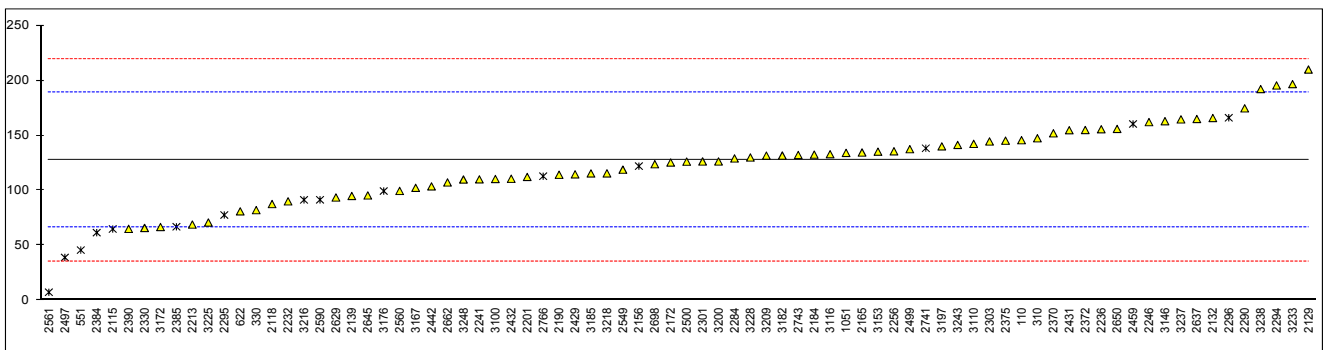
Determination of migration of Manganese as Mn on dried paint sample #17557; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	145.740		0.59	
310	EN71-3	147.5		0.64	
330	EN71-3	82.128		-1.49	
551	EN71-3	45.8	R(0.05)	-2.67	
622	EN71-3	81.0406		-1.52	
1051	EN71-3	134.1879		0.21	
2115	EN71-3	64.96	ex	-2.05	
2118	EN71-3	87.65		-1.31	
2129	EN71-3	210		2.68	
2132	EN71-3	165.90		1.24	
2139	EN71-3	95		-1.07	
2156	EN71-3	122.15	ex	-0.18	
2165	EN71-3	134.56		0.22	
2172	EN71-3	125.441		-0.08	
2184	EN71-3	132.6		0.16	
2190	EN71-3	114.31		-0.44	
2201	EN71-3	112.3		-0.50	
2213	EN71-3	69		-1.92	
2232	EN71-3	90.11		-1.23	
2236	EN71-3	155.7		0.91	
2241	EN71-3	110.142		-0.57	
2246	EN71-3	162.18		1.12	
2256	EN71-3	135.64		0.26	
2284	EN71-3	129.124		0.04	
2290	EN71-3	174.7		1.53	
2293		----		----	
2294	EN71-3	195.496		2.21	
2295	EN71-3	77.7	ex	-1.63	
2296	EN71-3	166.12	ex	1.25	
2299		----		----	
2301	EN71-3	126.3700		-0.05	
2303	EN71-3	144.59		0.55	
2330	EN71-3	65.94		-2.02	
2370	EN71-3	152		0.79	
2372	EN71-3	155		0.89	
2375	EN71-3	145.3		0.57	
2380	EN71-3	----		----	
2384	EN71-3	61.65	ex	-2.16	
2385	EN71-3	67.0	ex	-1.98	
2390	EN71-3	65.10		-2.04	
2413		----		----	
2429		114.67		-0.43	
2431	EN71-3	154.8317		0.88	
2432	EN71-3	110.66		-0.56	
2442	EN71-3	103.74		-0.78	
2459	EN71-3	160.480	ex	1.07	
2475	EN71-3	<500		----	
2497	EN71-3	39.1	ex	-2.89	
2499	EN71-3	137.559		0.32	
2500	EN71-3	126.23		-0.05	
2549	EN71-3	118.92		-0.29	
2560	EN71-3	99.6016		-0.92	
2561	EN71-3	7.46	C, ex	-3.92	First reported 6.62
2590	EN71-3	91.510	ex	-1.18	
2629	EN71-3	93.64		-1.11	
2637		165		1.21	
2642		----		----	
2645	EN71-3	95.50		-1.05	
2650	In house	155.982		0.92	
2659		----		----	
2662	EN71-3	107.3		-0.67	
2698	EN71-3	123.8822		-0.13	
2728	ISO8124-3	ND		----	
2741	EN71-3	138.4	ex	0.35	
2743	EN71-3	132.28881		0.15	
2766	EN71-3	113.0	ex	-0.48	
3100	EN71-3	110.44977		-0.56	
3110	EN71-3	142.40		0.48	
3116	EN71-3	133		0.17	
3146	EN71-3	163		1.15	
3153	EN71-3	135.3		0.25	
3167		102.4		-0.83	
3172		66.80		-1.99	
3176	EN71-3	99.495	ex	-0.92	
3182	EN71-3	131.756		0.13	
3185	EN71-3	115.5		-0.40	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	140.1		0.40	
3200	EN71-3	126.41		-0.04	
3209	EN71-3	131.7		0.13	
3216	EN71-3	91.4412	ex	-1.18	
3218	EN71-3	115.56		-0.40	
3225	EN71-3	70.88		-1.86	
3228	EN71-3	130		0.07	
3233	EN71-3	196.7197		2.25	
3237	EN71-3	164.67		1.20	
3238	EN71-3	192.2		2.10	
3243	EN71-3	141.4		0.44	
3248	EN71-3	110		-0.58	

normality OK
 n 65
 outliers 1 (+14excl)
 mean (n) 127.766
 st.dev. (n) 32.6841
 R(calc.) 91.515
 R(RR prEN71-3:13) 85.859

See for excluded test results the discussion in §5

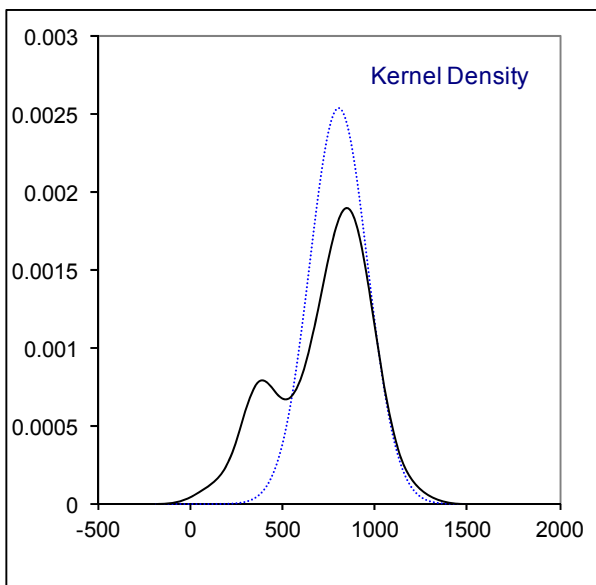
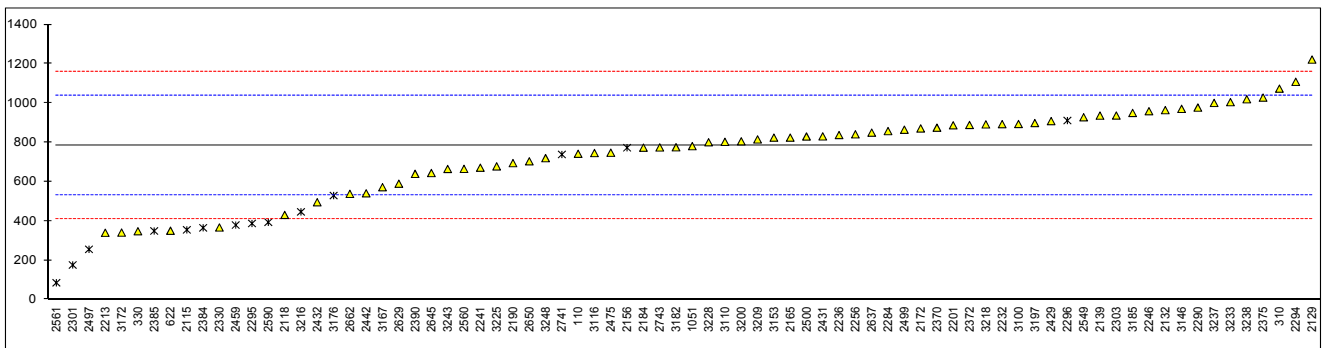


Determination of migration of Strontium as Sr on dried paint sample #17557; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	EN71-3	742.177		-0.34	
310	EN71-3	1074		2.31	
330	EN71-3	347.808		-3.48	
551	EN71-3	NA		----	
622	EN71-3	350.4049		-3.46	
1051	EN71-3	781.1629		-0.03	
2115	EN71-3	354.84	ex	-3.42	
2118	EN71-3	430.96		-2.82	
2129	EN71-3	1222		3.48	
2132	EN71-3	964.49		1.43	
2139	EN71-3	936.6		1.21	
2156	EN71-3	773.05	ex	-0.09	
2165	EN71-3	824.54		0.32	
2172	EN71-3	871.231		0.69	
2184	EN71-3	773.4		-0.09	
2190	EN71-3	694.68		-0.72	
2201	EN71-3	887.2		0.82	
2213	EN71-3	340		-3.54	
2232	EN71-3	893.2		0.86	
2236	EN71-3	837.5		0.42	
2241	EN71-3	671.345		-0.90	
2246	EN71-3	958.96		1.39	
2256	EN71-3	841.29		0.45	
2284	EN71-3	857.826		0.58	
2290	EN71-3	977.5		1.54	
2293		----		----	
2294	EN71-3	1108.722		2.58	
2295	EN71-3	387.3	ex	-3.16	
2296	EN71-3	911.42	ex	1.01	
2299		----		----	
2301	EN71-3	176.1500	R(0.05)	-4.85	
2303	EN71-3	937.00		1.21	
2330	EN71-3	366.84		-3.33	
2370	EN71-3	875		0.72	
2372	EN71-3	889		0.83	
2375	EN71-3	1028.5		1.94	
2380		----		----	
2384	EN71-3	365.17	ex	-3.34	
2385	EN71-3	349	ex	-3.47	
2390	EN71-3	640.0		-1.15	
2413		----		----	
2429	----	908.67		0.99	
2431	EN71-3	830.9016		0.37	
2432	EN71-3	495.49		-2.30	
2442	EN71-3	540.86		-1.94	
2459	EN71-3	379.360	ex	-3.23	
2475	EN71-3	747.7		-0.29	
2497	EN71-3	255.68	ex	-4.21	
2499	EN71-3	864.763		0.64	
2500	EN71-3	830.33		0.36	
2549	EN71-3	928.19		1.14	
2560	EN71-3	665.3387		-0.95	
2561	EN71-3	85.31	ex	-5.57	First reported 106.11
2590	EN71-3	393.502	ex	-3.12	
2629	EN71-3	589.8		-1.55	
2637	----	850		0.52	
2642		----		----	
2645	EN71-3	644.25		-1.12	
2650	In house	703.967		-0.64	
2659		----		----	
2662	EN71-3	538.2		-1.96	
2698		----		----	
2728	ISO8124-3	ND		----	
2741	EN71-3	738.6	ex	-0.37	
2743	EN71-3	774.56505		-0.08	
2766		----		----	
3100	EN71-3	893.7934		0.87	
3110	EN71-3	803.18	ex	0.15	
3116	EN71-3	746		-0.31	
3146	EN71-3	971		1.48	
3153	EN71-3	824.5		0.32	
3167	----	572.1		-1.69	
3172	----	341		-3.53	
3176	EN71-3	529.434	ex	-2.03	
3182	EN71-3	775.199		-0.08	
3185	EN71-3	950.2		1.32	

lab	method	value	mark	z(targ)	remarks
3197	EN71-3	898.6		0.91	
3200	EN71-3	805.81		0.17	
3209	EN71-3	815.4		0.25	
3216	EN71-3	446.3306	ex	-2.69	
3218	EN71-3	891.90		0.85	
3225	EN71-3	678.11		-0.85	
3228	EN71-3	801		0.13	
3233	EN71-3	1005.2046		1.76	
3237	EN71-3	1001.27		1.73	
3238	EN71-3	1020		1.87	
3243	EN71-3	664.9		-0.95	
3248	EN71-3	720		-0.51	
normality		OK			
n		64			
outliers		1 (+13excl)			
mean (n)		784.618			
st.dev. (n)		196.3631			
R(calc.)		549.817			
R(RR prEN71-3:13)		351.509			

See for excluded test results the discussion in §5



Determination of migration of Antimony, Arsenic, Barium, Boron, Cadmium and Chromium on dried paint sample #17557; results in mg/kg

lab	Sb	As	Ba	B	Cd	Cr
110	----	----	----	----	----	----
310	0.024	0.101	4.735	0.118	0.341	0.232
330	< 2	< 0.5	< 15	< 15	< 0.2	< 0.2
551	ND	ND	ND	NA	ND	ND
622	0.0312	0.0762	1.5973	2.5042	0.0390	0.0000
1051	<5	<5	<10	<10	<2	<0.1
2115	----	----	1.78	----	----	----
2118	0	0.09	1.65	0.95	0.10	0.04
2129	<1	<0,3	<10	<10	0.412	0.375
2132	<10	<2.5	<25	<25	<1.0	<10
2139	< 10	< 10	< 10	< 10	< 10	< 10
2156	0.10	0.10	0.10	0.10	0.10	0.10
2165	ND	ND	ND	ND	ND	ND
2172	<10	<10	<10	<10	<10	<10
2184	----	----	3.79	----	----	----
2190	<10	<0.5	<50	<50	0.22	<5
2201	<10	<10	<10	<50	<5	<10
2213	<10	<10	<10	<10	<0.1	<1
2232	ND	ND	2.993	ND	ND	ND
2236	<2.4	<2.4	4.29	3.44	<1.0	<2.4
2241	0.000	0.934	2.570	0.509	0.146	0.159
2246	<10	<2.5	<25	<25	<1.0	<10
2256	----	----	----	----	----	----
2284	ND	ND	ND	ND	ND	ND
2290	<10	<1	<10	<50	<0.5	<5
2293	ND	ND	2.25	----	ND	ND
2294	----	ND	7.858	6.527	2.295	----
2295	----	----	1.2	----	----	0.25
2296	0	0	8.21	1.62	0.42	0.27
2299	0.1033	0.0056	1.6555	----	0.1598	0.0700
2301	0	10.4800	0	0	0	0
2303	0.04	0.21	4.37	1.04	0.270	0.14
2330	ND	ND	ND	ND	ND	ND
2370	<10	<10	<50	<50	<5	<5
2372	<10	<10	<50	<50	<5	<5
2375	----	----	----	----	0.31	0.31
2380	----	----	----	----	----	----
2384	< 10	< 10	< 50	< 50	< 5	< 0.15
2385	<1	<0,5	1.4	<10	<0,5	<1
2390	ND	ND	ND	ND	ND	ND
2413	----	----	----	----	----	----
2429	<10	<10	<10	<50	<5	<10
2431	----	----	----	----	----	----
2432	----	----	2.05	----	----	----
2442	----	----	n.d.	C	----	----
2459	<1.0	<0.5	<5.0	14.570	<0.1	69.980
2475	<50	<1	<500	<50	<1	<0.1
2497	----	----	4.046	4.667	----	0.253
2499	----	----	3.437	5.271	0.117	0.280
2500	ND	ND	ND	ND	ND	ND
2549	<10	<3	<10	<10	<1	<10
2560	ND	ND	ND	ND	ND	ND
2561	0	4.30	3.38	0.31	0	28.05
2590	<L.O.Q.	<L.O.Q.	2.403	----	<L.O.Q.	<L.O.Q. C
2629	----	----	----	----	----	----
2637	<0.5	<1	5	<10	0.35	<1
2642	<10	<10	<10	----	<10	<10
2645	ND	ND	ND	ND	ND	ND
2650	<1	<1	4.786	1.905	<1	<0.2
2659	0.000	0.000	2.488	----	0.000	0.149
2662	<2	<2	3.3	2.9	<2	<2
2698	----	----	3.2722	----	----	----
2728	ND	ND	ND	ND	ND	ND
2741	<10	<2.5	<25	<25	<1	<0.2
2743	nd	nd	6.3318902	4.2853577	0.2187441	0.6875629
2766	----	----	5.0	----	----	----
3100	<10	<10	<10	<50	<5	<10
3110	<5	<5	<20	<100	<5	<1
3116	----	----	----	----	----	----
3146	n.d.	n.d.	n.d.	n.d.	0.342	n.d.
3153	<10	<10	<10	<50	<5	<10
3167	ND	ND	ND	ND	ND	ND
3172	< 10	< 1	< 50	< 50	< 0.05	< 10
3176	0.044	0.076	2.160	0.628	0.122	nd
3182	ND	ND	ND	ND	ND	ND
3185	<10	<10	<10	<50	<5	<10

lab	Sb	As	Ba	B	Cd	Cr
3197	ND	ND	ND	ND	0.31	ND
3200	<5.0	<1.0	<10.0	<10.0	<0.5	<1.0
3209	<5.0	<0.5	<10	<10	<0.5	<0.5
3216	0.0102	1.3953	1.3681	2.3206	0.0415	nd
3218	<10	<10	<10	<50	<5	<5
3225	<10	<10	<10	12.91	<10	<10
3228	<5	<5	3.5	<10	<1.0	<1.0
3233	< 5	0.5270	< 5	< 5	< 0.5	0.1667
3237	----	0.17	----	----	0.23	----
3238	----	0.07	4.1	7.5	0.23	0.17
3243	n.d.	n.d.	1.19	n.d.	n.d.	n.d.
3248	<10	<10	<10	<100	<5	<0.12

Lab 2442: first reported 17.04

Lab 2561: first reported 29.06

Determination of migration of Copper, Lead, Mercury, Nickel, Selenium, Tin and Zinc on dried paint sample #17557; results in mg/kg

lab	Cu	Pb	Hg	Ni	Se	Sn	Zn
110	----	----	----	----	----	----	----
310	0.278	0.118	0	0.466	0.011	0.178	4.255
330	< 2	< 1	< 0.5	< 2	< 2	< 0.2	< 15
551	ND	ND	ND	ND	ND	ND	ND
622	0.0844	0.0000	0.0000	0.0000	0.0000	9.3294	0.6490
1051	<10	<5	<5	<5	<10	<2.5	<10
2115	----	----	----	0.20	----	----	1.07
2118	0.44	0	0	0.21	0	0	0.90
2129	<10	<2	<0,1	<1	<5	<3	<10
2132	<15	<10	<10	<10	<10	<2.5	<50
2139	< 10	< 10	< 10	< 10	< 10	< 10	< 10
2156	0.80	0.10	0.10	0.16	0.10	0.10	4.89
2165	ND	ND	ND	ND	ND	ND	ND
2172	<10	<10	<10	<10	<10	<10	<10
2184	----	----	----	----	----	----	----
2190	<50	<1	<1	<10	<5	<4	<50
2201	<10	<10	<10	<10	<10	<10	<100
2213	<10	<10	<1	<1	<10	<1	<10
2232	ND	ND	ND	ND	ND	ND	ND
2236	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<50.0
2241	0.242	0.295	0.000	0.356	0.034	0.159	3.471
2246	<15	<10	<10	<10	<10	<2.5	<50
2256	----	----	----	----	----	----	----
2284	ND	ND	ND	ND	ND	ND	ND
2290	<10	<1	<1	<10	<5	<10	<100
2293	----	ND	ND	----	5.70	----	----
2294	----	----	----	----	----	ND	----
2295	0.2	----	----	2.2	----	----	----
2296	1.49	0	0	1.34	0	3.08	7.41
2299	----	0.6715	0.0955	----	0.0933	----	----
2301	0	0	0	3.6000	0	0	0
2303	0.17	0.14	0.79	0.31	0.26	0.61	4.48
2330	ND	ND	ND	ND	ND	ND	ND
2370	<50	<10	<10	<10	<10	<4.9	<50
2372	<50	<10	<10	<10	<10	<4.9	<50
2375	----	0.71	----	----	----	0.41	----
2380	----	----	----	----	----	----	----
2384	< 50	< 10	< 10	< 10	< 10	< 4.9	< 50
2385	<1	<1	<0,1	<1	<5	<1	<1
2390	ND	ND	ND	ND	ND	ND	ND
2413	----	----	----	----	----	----	----
2429	<10	<10	<10	<10	<10	<10	<100
2431	----	----	----	----	----	----	----
2432	----	----	----	----	----	----	----
2442	----	----	----	----	----	----	----
2459	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	166.150
2475	<50	<1	<1	<50	<1	<1	<500
2497	98.57	----	----	0.21	----	----	3.341
2499	0.547	----	0.105	0.260	----	----	7.329
2500	ND	ND	ND	ND	ND	ND	ND
2549	<10	<10	<5	<10	<10	<10	<10
2560	ND	ND	ND	ND	ND	ND	ND
2561	0	0	0	1.68	0	0	1.60
2590	<L.O.Q.	<L.O.Q.	<L.O.Q.	<L.O.Q.	<L.O.Q.	<L.O.Q.	<L.O.Q.
2629	----	----	----	----	----	----	73.29
2637	<1	<0.2	<0.1	<2	<2	<2	5
2642	----	<10	<5	----	<10	----	----
2645	ND	ND	ND	ND	ND	ND	ND
2650	<1	<1	<1	<1	<1	<1	1.841
2659	----	0.000	0.000	----	0.000	----	----
2662	<2	4.8	<2	<2	<2	<2	7.1
2698	----	----	----	0.2294	----	----	----
2728	ND	ND	ND	ND	ND	ND	ND
2741	<15	<10	<10	<10	<10	<2.5	<50
2743	0.3858868	0.2245001	nd	0.7762721	nd	0.1875312	6.2916439
2766	----	----	----	----	----	----	14.0
3100	<10	<10	<10	<10	<10	<10	<100
3110	<5	<5	<5	<5	<5	<2.5	<100
3116	----	----	----	----	----	----	----
3146	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3153	<10	<10	<10	<10	<10	<10	<100
3167	ND	ND	ND	ND	ND	ND	ND
3172	< 50	< 2	< 5	< 10	< 10	< 50	< 50
3176	0.146	nd	nd	0.210	0.077	0.017	0.819
3182	ND	ND	ND	ND	ND	ND	ND
3185	<10	<10	<10	<10	<10	<10	<100

lab	Cu	Pb	Hg	Ni	Se	Sn	Zn
3197	ND	0.26	ND	ND	ND	ND	ND
3200	<10.0	<2.0	<2.0	<10.0	<5.0	<10.0	<10.0
3209	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<10
3216	nd	nd	nd	0.5567	nd	nd	nd
3218	<10	<10	<10	<10	<10	<10	<100
3225	<10	<10	<10	<10	<10	<10	<10
3228	<2.5	<2.5	<2.5	<2.5	<10	<1.0	<10
3233	< 5	< 0.5	< 0.5	< 5	< 5	< 0.5	< 5
3237	----	----	----	----	----	----	----
3238	0.22	0.16	----	0.25	----	0.18	2.6
3243	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3248	<10	<10	<10	<10	<10	<0.8	<10

Lab 2294: first reported 16.430

Lab 2497: first reported 18.362

Lab 2629: first reported 46.14

APPENDIX 2

Details as reported by the participants for sample #17557 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)?
110	Yes	0.1020	5.0	2.5	Yes	1.0	60	60
310	Yes	499	12.5		Yes	1.1	60	60
330	Yes	211 mg	10.550 ml		---			
551	No	200	10	1.7	Yes		60	60
622	Yes	0.5017	25		Yes	1.5	60 min	60 min
1051	Yes	299	15	6.9	Yes	1.2	60	60
2115	Yes	1550 mg (?)	7.5 ml	1.2	No		60 min	60 min
2118	No	500 mg	23 ml	6.0	Yes	1.5	60 min	60 min
2129	Yes			5,9	Yes	1,2	1 h	1 h
2132	Yes	<0.1 g	5.0 ml	pH >2.0	Yes	pH ~1.2	1 hr	1 hr
2139	Yes	100mg	5 ml	4.0	Yes	1.4	60 min	1 minutes
2156	Yes	100	5	1.0	No		60	60
2165	Yes	100mg	5.0ml	1.3	Yes	1.3	60 min	60 min
2172	Yes	0.1	5 mL	1.6	Yes	1.2	60 min	60 min
2184	Yes	0.19	5 ml		Yes	1.3	60	60
2190	Yes	0.2001	10	5.88	Yes	1.23	60	60
2201	Yes	200	10	>2.0	Yes	1.2	60	60
2213	Yes	100			---			
2232	---				---			
2236	Yes	301.5 mg	15 mL	5.62	Yes	1.26	60 min	60 min
2241	Yes	200.2	10	5.80	Yes	1.22	60 min	60 min
2246	Yes	0.1 g	5 ml	pH >2.0	Yes	~1.2	1 hr	1 hr
2256	Yes	121.4	6.07	5.998	Yes	1.206	60	60
2284	Yes	0.1012	5.06	1.43	Yes	1.22	60 min	60 min
2290	---				---			
2293	Yes	0.1014 mg (g?)	10 mL	2.5	Yes	1.3	60 min	60 min
2294	Yes	49.3	200	1.23	Yes		60	60
2295	Yes	100 mg	5 ml	1-2	No		1 hour	1 hour
2296	Yes	100	5	1.35	No		60	60
2299	Yes	0.1000 g	5 ml	> 6	Yes	< 1.5	1 min 20 sec	1 min
2301	Yes	200	10	1.82	Yes	1.16	60	60
2303	Yes	100	5	4.2	Yes	1.29	60	60
2330	Yes	200.6	10	6.093	Yes	1.269	60 min	60 min
2370	Yes	0.2g	10ml	2.2	Yes	1.29	1 hour	1 hour
2372	Yes	0.2g	10mL	5.6	Yes	1.2	60 min	60 min
2375	Yes	100	20	1.3	Yes		60 min	60 min
2380	Yes	200 mg	10 ml	5.56	Yes	1.29	1 Hr	1 Hr
2384	Yes	100 mg	5 ml	1.25	No		60 min	60 min
2385	Yes	100	5	1,2	No		60	60
2390	Yes	200 mg	10 ml	7.0	Yes	1.0	60 min	60 min
2413	---				---			
2429	Yes	200	10	1.76	Yes	1.26	1 hour	1 hour
2431	Yes	0.1	5	5	Yes	1.24	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)?
2432	---				---			
2442	Yes	100mg	10ml	1.35	Yes	1.33	60 min	60 min
2459	Yes	200mg	25ml	1.22	No		60 min	60 min
2475	Yes	103.2mg	5.2ml	5	Yes	1.26	60 min	60 min
2497	Yes	100	5	1.27	No		60	60
2499	Yes	150,44	22,5	2,74	Yes	1,498	60	60
2500	Yes	100	5	2.4	Yes	1.2	60	60
2549	Yes	0.3	15	5.4	Yes	1.11	60	60
2560	Yes	200.8	10	3	Yes	1	60	60
2561	Yes	102.7mg	5ml	1-1.5	No		60 min	60 min
2590	Yes	196	10	1.19	No		60	60
2629	No	200 mg	10 nk		---		60 min	60 min
2637	Yes	200	10	4.5	Yes	1.	60	60
2642	Yes				---			
2645	Yes	100 mg	5 mL	>1.5	Yes	1 - 1,5	1 hour	1 hour
2650	No	0.1 mg (g ?)	5 ml	>4	Yes	1.12	60 min	60 min
2659	Yes	301.4 mg	0.15 ml (L?)	5.21	Yes	1.33	60 min	60 min
2662	Yes	100mg	5ml	2.0	Yes	1.20	60 min	60 min
2698	Yes	100	5	1.2	Yes	1.2	60	60
2728	Yes	100	5	2	Yes	1.2	60	60
2741	Yes	0.2146	10.73		No		60 min	60 min
2743	Yes	134.3 mg	7.3 ml	4.8	Yes	1.3	60 min	60 min
2766	No	0.2 g	10ml	1-2	No		1 hour	1 hour
3100	Yes	120.2/200.9/140.0	6 / 10 / 7	1.56/5.34/5.32	Yes	1.21/1.22/1.24	60 min	60 min
3110	Yes				---			
3116	Yes	0.1	5	>2	Yes	1.2	60	60
3146	Yes	200 mg	10 ml	8,5	Yes	1,2	60	60
3153	Yes	100 mg	5ml	5.52	Yes	1.21	60 min	60 min
3167	Yes	400	20		Yes	1.2	60	60
3172	Yes	200	10.0	1.47	Yes	1.2	60 min	60 min
3176	Yes	500 mg	25	1,3	No		1 hr	1 hr
3182	Yes	200 mg	10 ml	5.75	Yes	1.14	60 min	60 min
3185	Yes	120mg	6ml	6.00	Yes	1.24	60 min	60 min
3197	Yes	200 mg	10 mL	1,71	Yes	1,28	60 min	60 min
3200	Yes	100mg	5ml	1.6/1.6/5.6	Yes	1.3	1h	1h
3209	Yes	0.1002	5	1.8	Yes	1.2	60	60
3216	No	200 mg	10 ml	4.3	No		60 min	60 min
3218	Yes	200mg	10ml	5.975	Yes	1.112	60 min	60 min
3225	Yes	0.1g	5mL	3.4	Yes	1.20	60	60
3228	Yes	102mg	5.1ml	5.7	Yes	1.2	60 min	60 min
3233	Yes	114.7	5.7	5.44	Yes	1.30	60	60
3237	Yes	100	10	5,27	Yes	1,3	60 min	60 min
3238	Yes		10		Yes		60	60
3243	---				---			
3248	Yes	0.2	10	1.2	Yes	1.2	60	60

APPENDIX 3

Number of participants per country

3 labs in BANGLADESH
1 lab in BELGIUM
1 lab in BRAZIL
1 lab in CAMBODIA, Kingdom of
18 labs in CHINA, Peoples Republic of
5 labs in FRANCE
5 labs in GERMANY
1 lab in GUATEMALA
11 labs in HONG KONG
3 labs in INDIA
4 labs in INDONESIA
7 labs in ITALY
3 labs in MALAYSIA
1 lab in MEXICO
1 lab in NETHERLANDS
2 labs in PAKISTAN
1 lab in PERU
1 lab in SINGAPORE
1 lab in SOUTH KOREA
2 labs in SPAIN
2 labs in TAIWAN R.O.C.
1 lab in THAILAND
5 labs in TURKEY
3 labs in U.S.A.
3 labs in UNITED KINGDOM
3 labs in VIETNAM

APPENDIX 4

Abbreviations:

C	= final result after checking of first reported suspect result
D(0.01)	= outlier in Dixon's outlier test
D(0.05)	= straggler in Dixon's outlier test
G(0.01)	= outlier in Grubbs' outlier test
G(0.05)	= straggler in Grubbs' outlier test
DG(0.01)	= outlier in Double Grubbs' outlier test
DG(0.05)	= straggler in Double Grubbs' outlier test
R(0.01)	= outlier in Rosner's outlier test
R(0.05)	= straggler in Rosner's outlier test
n.a.	= not applicable
n.d.	= not detected
fr.	= first reported test result
ex	= test result excluded from statistical evaluation

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 Horwitz. Journal of AOAC International Vol. 79 No.3. 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)
- 10 ISC7/GF/csteop/toysinorg/220604 D(04) Assessment of bioavailability of certain elements in toys
- 11 ISO 13528:2005 Statistical methods for use in proficiency testing by interlaboratory comparisons
- 12 M. Thompson and R. Wood. J. AOAC Int. 76. 926. (1993)
- 13 Analytical Methods Committee Technical brief, No4 January 2001.
- 14 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry 2002, Analyst 2002, 127 page 1359-1364,
- 15 EN71-3:2013, Safety of Toys - Migration of certain elements
- 16 CEN/TC 52/WG 5 N 905, Statistical evaluation of results from the round robin on EN71-3:2013, Migration of compounds in dried paint, finger paint, plaster and PVC, Quo Data, 15 Oct 2012.
- 17 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, *Technometrics*, 25(2), pp. 165-172, (1983).
- 18 ISO 8124-3 (2010)