

Results of Proficiency Test  
Phthalates in Plastics  
February 2009

CORRECTED

Organised by: Institute for Interlaboratory Studies  
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## 1 INTRODUCTION

Phthalates act as softeners and are commonly used as plasticizers in PVC. Phthalates may migrate fairly easily from PVC into the environment. Because phthalates appeared to have negative effects on health and the environment, regulations have been set up.

In Europe, the Commissioner for Industrial Affairs of the EC is responsible for toy regulations. The manufacture and import of toys is regulated by the European Union's Toy Directive (88/378), with in addition the general product safety, which is covered by EU directive 2001/95 and Council Directive + amendments 76/769/EEC. These regulations govern conditions related to toys intended for children under 36 months of age (this group often suck or chew on toys and phthalates migrate easily). Therefore plastic toys are not allowed to contain either more than 0.1 %M/M of DEHP, DBP and BBP combined or more than 0.1%M/M of DINP, DIDP and DNOP combined.

- |   |                   |                      |
|---|-------------------|----------------------|
| • bis(2-ethylhexyl)phthalate (DEHP) <sup>1)</sup> | CASno. 117-81-7   | EINECS no. 204-211-0 |
| • dibutylphthalate (DBP)                          | CASno. 84-74-2    | EINECS no. 201-557-4 |
| • benzylbutylphthalate (BBP)                      | CASno. 85-68-7    | EINECS no. 201-622-7 |
| • di-isononylphthalate (DINP)                     | CASno. 28553-12-0 | EINECS no. 249-079-5 |
| • di-isodecylphthalate (DIDP)                     | CASno. 26761-40-0 | EINECS no. 247-977-1 |
| • di-n-octylphthalate (DNOP)                      | CASno. 117-84-0   | EINECS no. 204-214-7 |

<sup>1)</sup> DEHP is also known as di-(iso)-octylphthalate (DOP).

The determination of phthalates in plastics is known to give problems with the comparability of laboratory results. However, no appropriate PVC reference materials are available (ref. 20). As an alternative, participation in a proficiency test may enable laboratories to check this comparability. Therefore, a proficiency test (laboratory-evaluating interlaboratory study) for the determination of individual phthalates in plastics was again organized by the Institute for Interlaboratory Studies in February 2009.

In the present international interlaboratory study of February 2009, 103 laboratories in 27 different countries have participated. See appendix 3 for a list of the number of participating laboratories per country. In this report the results of the proficiency test are presented and discussed.

## 2 SET UP

The Institute for Interlaboratory Studies in Spijkenisse was the organiser of this proficiency test. It was decided to send two different plastics samples (approximately 3 grams each), labelled #0913 PVC and #0914 PP.

Sample #0914 was prepared by a third party laboratory, especially for the determination of different phthalates. Analyses were subcontracted to an accredited laboratory.

Participants were requested to report some additional details of the methods used.

## 2.1 QUALITY SYSTEM

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, has implemented a quality system based on ISO guide 43 and ILAC-G13:2000. This ensures 100% confidentiality of participant's data. Also customer's satisfaction is measured on a 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 'i.i.s. Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of November 2008 (i.i.s.-protocol, version 3.1).

## 2.3 CONFIDENTIALITY STATEMENT

All data present 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 of 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

Two samples were prepared from two different bulk materials.

The first bulk material was a purple coloured PVC child toy, which was found to be positive on phthalates. The material was cut into pieces and after homogenisation divided over 122 plastic bags of 3 gram each and labelled #0913.

The second bulk material was a yellow polypropylene granulate, to which known amounts of DBP, BBP and DEHP were added. The bulk materials were thoroughly mixed and subsequently distributed over plastic bags (3 gram each) and labelled #0914.

The homogeneity of the subsamples was checked by determination of total phthalates on 4 stratified random selected subsamples for #0913 and by the determination of DBP on 3 stratified random selected subsamples for #0914 using EN14372:04.

	Total Phthalates in %M/M
Sample #0913-1	19.2
Sample #0913-2	19.0
Sample #0913-3	19.1
Sample #0913-4	19.5

Table 1: results of the homogeneity test on the subsamples #0913

	DBP in %M/M
Sample #0914-1	0.250
Sample #0914-2	0.260
Sample #0914-3	0.251

Table 2: results of the homogeneity test on the subsamples #0914

From the results of the homogeneity tests, the repeatabilities were calculated:

	Total Phthalates in %M/M #0913	DBP in %M/M #0914
r (observed)	0.6	0.015
reference method	EN14372:04	EN14372:04
r (reference method)	1.9	0.025

Table 3: repeatabilities of DEHP and BBP contents of the subsamples #0913 and #0914

The calculated repeatabilities are in agreement with the requirements of EN14372:04. Therefore, homogeneity of subsamples #0913 and #0914 was assumed.

To each of the participating laboratories, one sample of approx. 3 grams of sample of #0913 and 3 grams of sample of #0914 were sent on February 11, 2009.

## 2.5 ANALYSIS

The participants were requested to determine six individual phthalates (DINP, DBP, BBP, DIDP, DNOP, DEHP) and other phthalates on samples #0913 and #0914.

The participants were explicitly asked to treat the samples as if they were routine samples and to report the analytical results using the indicated units on the report form and not to round the results, but report as much significant figures as possible.

The participants were also asked not to report 'less than' results which are above the detection limit, because such results can not be used for meaningful statistical calculations.

To get comparable results a detailed report form, on which the units were prescribed, was sent together with each set of samples. Also a letter of instructions was added to the package.

The laboratories were asked to complete the report form with the requested details of the methods used.

## 3 RESULTS

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

Directly after deadline, a reminder fax was sent to those laboratories that did not report results at that moment. Shortly after the deadline the available results were screened for suspect data. A result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the

results. Additional or corrected results are used for the data analysis and the original results are placed under 'Remarks' in the result tables in appendix 1.

### 3.1 STATISTICS

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

First the normality of the distribution of the various data sets per determination was checked by means of the Lilliefors-test. After removal of outliers, this check was repeated.

Not all data sets proved to have a normal distribution, in which cases the statistical evaluation of the results should be used with due care.

In accordance to ISO 5725 (1986 and 1994) the original results per determination were submitted subsequently to Dixon and Grubbs outlier tests. Outliers are marked by D(0.01) for the Dixon test, by G(0.01) or DG(0.01) for the Grubbs test. Stragglers are marked by D(0.05) for the Dixon test, by G(0.05) or DG(0.05) for the Grubbs test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

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

Statistical calculations were performed as described in the report 'i.i.s. Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of November 2008 (i.i.s.-protocol, version 3.1).

### 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 results are plotted. The corresponding laboratory numbers are under the X-axis. A straight line presents the average of the reported data. Two striped lines present the reproducibility limits of the selected standard, calculated as  $\text{mean} \pm \text{target reproducibility}$ , parallel to the average line. Outliers and other data, which were excluded from the calculations, are represented as a cross. Accepted data are represented as a triangle.

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms (see appendix 4; nr.17 and 18).

### 3.3 Z-SCORES

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

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

In case no literature reproducibility was available, other target values were used. In some cases literature repeatability is available; in other cases a reproducibility of a former iis proficiency test could be used and also the Horwitz equation can be used to estimate target reproducibility.

The z-scores were calculated according to:

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

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

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

## 4 EVALUATION

In this interlaboratory study no problems were encountered during the execution. Only one participant did not send in any results. Finally 102 of the 103 participating laboratories reported 797 numerical results. Observed were 33 outlying results, which is 4.1%. In proficiency studies outlier percentages of 3% - 7.5% are quite normal.

### 4.1 EVALUATION PER PHTHALATE/SAMPLE

In this section the results are discussed per component.

For evaluation of the results of this Interlaboratory Study, the requirements from a the standardised method EN14372:04, "Child use and care articles, Cutlery and feeding utensils, Safety requirements and tests" were used. Regrettably, only a relative within-laboratory standard deviation RSDr is given in this Standard. Multiplication of the RSDr by 2.8 gives the repeatability. Multiplication of the repeatability by 3 gives the estimate of the target reproducibility. For comparison also a target reproducibility based on the Horwitz equation is given for each phthalate.

Because EN14372 describes only a releasing method by Soxhlet extraction using diethylether, only the results of laboratories that used this Soxhlet method using diethylether as extraction solvent were used to determine the assigned values. The results of participants that used a deviating releasing method were excluded (marked ex) from the statistical calculations to determine the assigned values.

EVALUATION OF PVC SAMPLE #0913:

DINP: This determination seems problematic at a concentration level of 0.03-0.04%M/M in PVC. The calculated reproducibility of the total group is, after rejection of the statistical outliers, not in agreement with the estimated requirements of EN14372:04. The effect of the phthalate releasing technique appears to be not significant. When the EN14372 results are evaluated separately, the assigned value is not significantly different from the assigned value for the all reported results. Also, the observed spread is not significantly different. The large spread may be explained by the low concentration (<0.05%M/M).

This low concentration will not allow positive identification of DINP as was remarked by several laboratories.

DBP: This determination is not problematic at a level of 14%M/M in PVC for the laboratories that used the EN14372 method. However, for all other methods used, this determination is very problematic as all observed reproducibilities are much larger than the estimated EN14372 requirement. The calculated reproducibility of the total group is, after rejection of the statistical outliers, not at all in agreement with the estimated requirements of EN14372:04.

The effect of the phthalate releasing technique appears to be significant. When the reported results are evaluated per technique, the assigned value for the EN14372 results is highest of all results and the assigned value for the Ultrasonic extraction results is smallest of all results. The relative spread of EN14372 results is much smaller than the spreads of all other methods.

DEHP: This determination is problematic at a concentration level of 5.5%M/M in PVC as all observed reproducibilities are larger than the estimated EN14372 requirement. The calculated reproducibility of the total group is, after rejection of the statistical outliers, not at all in agreement with the estimated requirements of EN14372:04.

The effect of the phthalate releasing technique appears to be significant. When the reported results are evaluated per technique, the assigned value for the EN14372 results is highest of all results and the assigned value for the Ultrasonic extraction results is smallest of all results. The relative spread of EN14372 results is smaller than the spreads of all other methods.

DIBP: In total 23 laboratories reported the presence of one or 2 isomers of DIBP, being di-isobutyl phthalate (CAS 84.69.5) and n-butyl isobutyl phthalate (CAS 17851.53.5). This determination is problematic at a concentration level of 2.3%M/M in PVC. The calculated reproducibility of the total group is, after rejection of the statistical outliers, not at all in agreement with the estimated requirements of EN14372:04. It is however not clear whether all 23 laboratories reported the sum of both isomers.



## EVALUATION OF PP SAMPLE #0914:

- DBP:** This determination is problematic at a level of 0.24%M/M in PP as all observed reproducibilities are larger than the estimated EN14372 requirement. The calculated reproducibility of the total group is, after rejection of the statistical outliers, not at all in agreement with the estimated requirements of EN14372:04. The effect of the phthalate releasing technique appears to be significant. When the reported results are evaluated per technique, the assigned value for the THF results is smallest of all results and the relative spread of THF results is much larger than the spreads of all other methods.
- BBP:** This determination is problematic at a concentration level of 0.17-0.23%M/M in PP. The calculated reproducibility of the total group is, after rejection of the statistical outliers, not at all in agreement with the estimated requirements of EN14372:04. The effect of the phthalate releasing technique appears to be significant. When the reported results are evaluated per technique, the assigned value for the THF results is smallest of all results and the relative spread of THF results is much larger than the spreads of all other methods.
- DEHP:** This determination is problematic at a concentration level of 0.08-0.12%M/M in PP as all observed reproducibilities are larger than the estimated EN14372 requirement. The calculated reproducibility of the total group is, after rejection of the statistical outliers, not at all in agreement with the estimated requirements of EN14372:04. The effect of the phthalate releasing technique appears to be not significant at this low phthalate level.

## **4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES**

A comparison has been made between the reproducibilities as found for the group of participating laboratories (also per extraction method) and the estimated reproducibilities of EN14372:2004 are compared in the next tables:

Parameter	Unit	n	Average	2.8 * sd	R (target)
<b>DINP – EN14372</b>	<b>%M/M</b>	<b>30</b>	<b>0.034</b>	<b>0.024</b>	<b>0.009</b>
DINP – all results	%M/M	59	0.035	0.025	0.009
<b>DBP – EN14372</b>	<b>%M/M</b>	<b>35</b>	<b>14.02</b>	<b>3.10</b>	<b>3.53</b>
DBP – all results	%M/M	100	13.15	6.69	3.31
DBP – Soxhlet, EN14372 excl.	%M/M	16	12.21	7.43	3.20
DBP – THF extraction	%M/M	23	13.70	7.10	3.45
DBP – Ultrasonic extraction	%M/M	14	12.10	7.26	3.05
<b>DEHP – EN14372</b>	<b>%M/M</b>	<b>36</b>	<b>5.55</b>	<b>2.04</b>	<b>1.40</b>
DEHP – all results	%M/M	100	5.33	3.44	1.34
DEHP – Soxhlet, EN14372 excl.	%M/M	14	5.48	2.52	1.38
DEHP – THF extraction	%M/M	23	5.52	3.00	1.39
DEHP – Ultrasonic extraction	%M/M	13	5.20	2.20	1.31
DIBP – all results	%M/M	23	2.32	3.82	0.59

Table 4: sample #0913

Parameter	Unit	n	Average	2.8 * sd	R (target)
<b>DBP – EN14372</b>	<b>%M/M</b>	<b>35</b>	<b>0.24</b>	<b>0.08</b>	<b>0.06</b>
DBP – all results	%M/M	92	0.21	0.14	0.05
DBP – Soxhlet, EN14372 excl.	%M/M	14	0.22	0.08	0.06
DBP – THF extraction	%M/M	22	0.17	0.21	0.04
DBP – Ultrasonic extraction	%M/M	10	0.23	0.09	0.06
<b>BBP – EN14372</b>	<b>%M/M</b>	<b>35</b>	<b>0.21</b>	<b>0.10</b>	<b>0.05</b>
BBP – all results	%M/M	90	0.20	0.14	0.05
BBP – Soxhlet, EN14372 excl.	%M/M	14	0.22	0.08	0.06
BBP – THF extraction	%M/M	22	0.17	0.21	0.04
BBP – Ultrasonic extraction	%M/M	10	0.23	0.09	0.06
<b>DEHP – EN14372</b>	<b>%M/M</b>	<b>36</b>	<b>0.11</b>	<b>0.08</b>	<b>0.03</b>
DEHP – all results	%M/M	98	0.10	0.11	0.03
DEHP – Soxhlet, EN14372 excl.	%M/M	16	0.12	0.10	0.03
DEHP – THF extraction	%M/M	22	0.08	0.10	0.02
DEHP – Ultrasonic extraction	%M/M	10	0.12	0.05	0.03

Table 5: sample #0914

### 4.3 COMPARISON WITH PREVIOUS INTERLABORATORY STUDIES

	February 2009	February 2008	February 2007	March 2006
Number of reporting labs	102	78	67	51
Number of results reported	797	760	394	329
Statistical outliers	33	25	31	17
Percentage outliers	4.1%	3.3%	7.9%	5.2%

Table 6: comparison with previous proficiency tests

In proficiency tests, outlier percentages of 3% - 7.5% are quite normal.

In comparison with previous proficiency tests, significant improvements are observed for the evaluated components, see below table.

Parameter	February 2009	February 2008	February 2007	March 2006	March 2005
DINP	(71%)*	72%	104%/(189%)*	76%	--
DBP	22%/33%	41%	--	54%	54%
DEHP	36%/(73%)*	54%	53%/59%	49%/39%	59%/49%
BBP	48%	64%	--	--	--
DIDP	--	51%	--	--	--
DIBP	--	--	--	38%	28%

Table 7: Relative reproducibilities of detected phthalates for last years

(X)\* concentration of the component is near or below 0.1%M/M

## 5 CONCLUSIONS

In this proficiency test for the determination of phthalates in plastic, it was noticed that almost all the participants found all phthalates present in both samples #0913 and #0914.

The determination of phthalates in plastics seems again problematic as in previous years. The reported details of the methods, which were used by the participants, are listed in appendix 3.

The techniques to release the phthalates used by the participants were rather diverse, but could be divided into three major groups. The Soxhlet extraction with diethylether was considered to be the correct one as this technique to release the phthalates in plastic is also used in the only available standard test method EN14372. Also, it is a versatile method that is applicable on various types of plastics.

In the previous PT (February 2008) it was found that the influence of the sample preparation technique (Soxhlet extraction, THF dissolution or Ultrasonic extraction) is quite significant. Also in this PT this effect was observed, but also that the type of plastic has a significant effect. In PVC sample #0913 the THF results were the highest of all results, while in pp sample #0914 the THF results were the lowest of all results. Also, the effects of the various extraction techniques appeared to be far less significant in pp sample #0914 than in PVC sample #0913. The spread of the EN14372 results is small in comparison with the spreads of the other results, but in several cases still large in comparison with the EN14372 requirements.

## APPENDIX 1

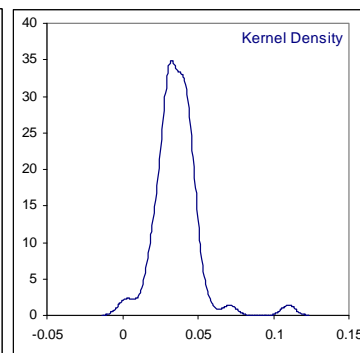
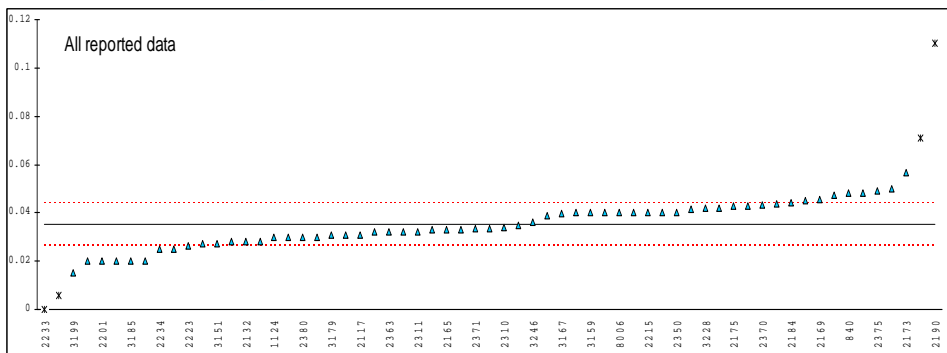
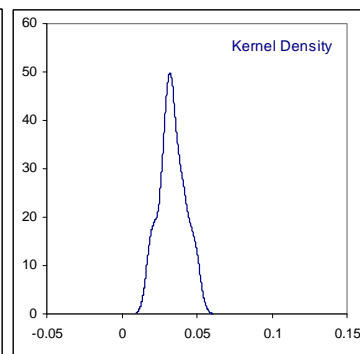
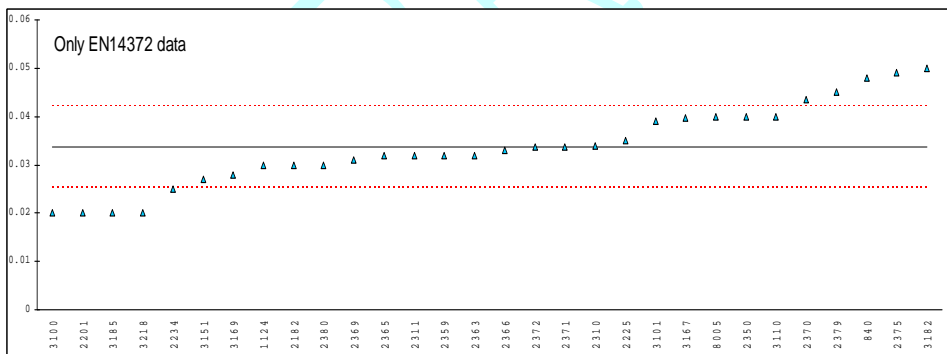
## Determination of DINP on sample #0913; results in %M/M

lab	method	value	mark *)	z(targ)	remarks
310	in house	<0.1	ex	----	
330	in house	<0.02	ex	----	
339	in house	<0.05	ex	----	
622	EN14372	nd		----	
840	EN14372	0.048		4.70	
1051	D3241	0.0435	ex	3.22	
1124	EN14372	0.030		-1.23	
2102		----		----	
2115	in house	nd	ex	----	
2117	in house	0.031	ex	-0.90	
2129		----		----	
2132	in house	0.028	ex	-1.89	
2137	EN147372	<0.01		----	
2139	in house	nd	ex	----	
2152	--	0.048	ex	4.70	
2156	EN14372	nd	C	----	First reported 0.010
2159	in house	<0.005	ex	----	
2165	in house	0.033	ex	-0.24	
2166	in house	nd	ex	----	
2169	in house	0.0455	ex	3.87	
2172	in house	0.0417	ex	2.62	
2173	in house	0.05649	ex	7.49	
2175	EPA3550C/8270D	0.043	ex,C	3.05	First reported 0.0025
2179	in house	nd	ex	----	
2182	EN14372	0.03		-1.23	
2184	in house	0.044	ex	3.38	
2187	D3241	0.02	ex	-4.52	
2190	in house	0.11	ex	25.12	
2196	D3241	<0.01	ex	----	
2197	LFBG B80.32	nd	ex	----	
2201	EN14372	0.02		-4.52	
2212		----		----	
2215	in house	0.040	ex	2.06	
2216		----		----	
2222		----		----	
2223	in house	0.0261	ex,C	-2.52	First reported <0.01
2225	EN14372	0.035	C	0.42	First reported <0.01
2226		----		----	
2229	in house	0.04	ex,C	2.06	First reported <0.02
2233	in house	0	ex	-11.11	
2234	EN14372	0.025		-2.88	
2240	in house	0.071	ex,C	12.27	First reported <0.010
2242		----		----	
2310	EN14372	0.034		0.09	
2311	EN14372	0.032		-0.57	
2350	EN14372	0.04		2.06	
2359	EN14372	0.032		-0.57	
2361	D3241	0.043	ex	3.05	
2363	EN14372	0.032		-0.57	
2365	EN14372	0.032		-0.57	
2366	EN14372	0.033		-0.24	
2369	EN14372	0.031		-0.90	
2370	EN14372	0.0434		3.18	
2371	EN14372	0.0336		-0.05	
2372	EN14372	0.0336		-0.05	
2375	EN14372	0.049		5.03	
2379	EN14372	0.045		3.71	
2380	EN14372	0.03		-1.23	
2385	in house	0.027	ex	-2.22	
3100	EN14372	0.02		-4.52	
3101	EN14372	0.039		1.73	
3107	EN14372	<0.01	C	----	First reported 16.3
3110	EN14372	0.040		2.06	
3116	in house	0.04	ex	2.06	
3117		----		----	
3134	in house	<0.0006	ex	----	
3150		----		----	
3151	EN14372	0.027	C	-2.22	First reported 0.1
3153	in house	0.028	ex	-1.89	
3154		----		----	
3159	in house	0.040	ex	2.06	
3161		----		----	
3166		----		----	

3167	EN14372	0.0396	C	1.93	First reported <0.01
3169	EN14372	0.0279	C	-1.92	First reported <0.01
3172	in house	0.033	ex	-0.24	
3174	EN14372	0.006	ex	-9.14	
3175	in house	<0.01	ex	----	
3176		----		----	
3179	in house	0.031	ex	-0.90	
3182	EN14372	0.05		5.36	
3185	EN14372	0.02		-4.52	
3191	in house	0.025	ex	-2.88	
3192		----		----	
3195		----		----	
3199	in house	0.015	ex	-6.17	
3200	EN14372 MOD	0.03	ex	-1.23	
3210	EN14372	<0.05		----	
3216	EN14372	nd		----	
3218	EN14372	0.02		-4.52	
3220	In house	nd	ex	----	
3222		----		----	
3225	in house	0.0472	ex	4.43	
3228	in house	0.042	ex	2.72	
3233		----		----	
3237		----		----	
3238		----		----	
3243	SAA L144	nd	ex,C	----	First reported 0.0078
3246	in house	0.036	ex	0.75	
3248	in house	0.042	ex	2.72	
4095		----		----	
8005	EN14372	0.04		2.06	
8006	in house	0.04	ex	2.06	

Compare all results reported:		
normality	OK	not OK
n	30	59
outliers	0 (+32 ex)	4
mean (n)	0.0337	0.0351
st.dev. (n)	0.00846	0.00890
R(calc.)	0.0237	0.0249
R(EN14372:04)	0.0085	0.0088
R(Horwitz)	0.0094	0.0098

**ex:** For the determination of the assigned value (= mean(n)), only EN14372 data (using Soxhlet with Diethylether as extraction solvent) were used. Subsequently all test results were compared with this assigned value.



## Determination of DBP on sample #0913; results in %M/M

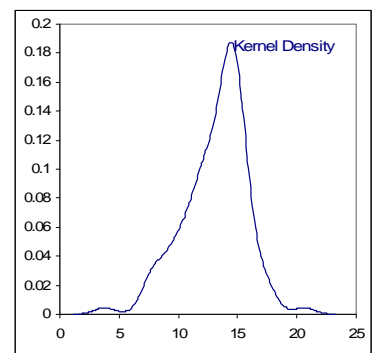
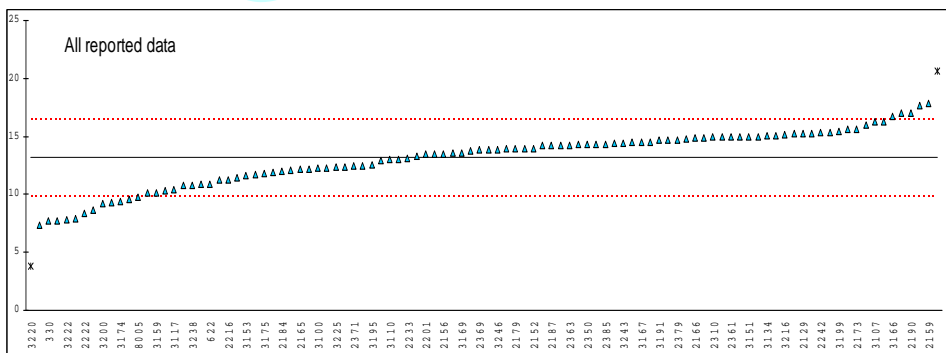
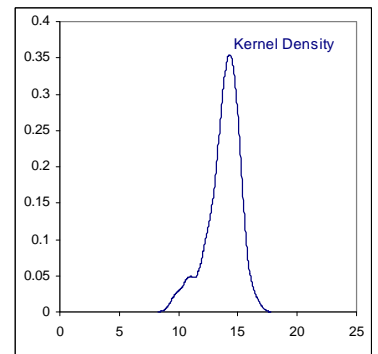
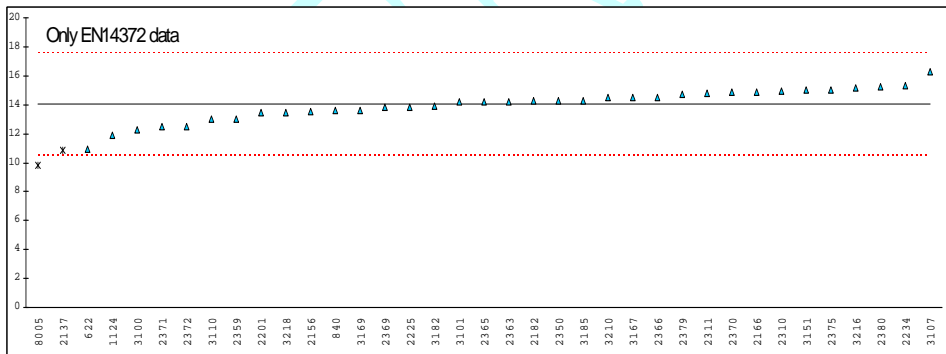
lab	method	value	mark	z(targ)	remarks
310	in house	17	ex	2.36	
330	in house	7.72	ex	-4.99	
339	in house	15.0	ex	0.78	
622	EN14372:04	10.9124		-2.46	
840	EN14372:04	13.574		-0.35	
1051	ASTM D3421	16.31	ex	1.82	
1124	EN14372:04	11.9		-1.68	
2102	in house	14.70	ex	0.54	
2115	in house	12.1	ex,C	-1.52	First reported 4.8
2117	in house	20.637	ex	5.25	
2129	in house	15.2	ex,C	0.94	First reported 25.0
2132	in house	11.266	ex	-2.18	
2137	EN147372:04	10.887	G(0.05)	-2.48	
2139	in house	13.268	ex	-0.59	
2152	--	13.98	ex	-0.03	
2156	EN14372 MOD	13.498		-0.41	
2159	in house	17.89	ex	3.07	
2165	in house	12.16	ex	-1.47	
2166	in house	14.9		0.70	
2169	in house	13.74	ex	-0.22	
2172	in house	15.6	ex	1.25	
2173	in house	15.62	ex	1.27	
2175	EPA3550C/8270D	7.89	ex	-4.86	
2179	in house	13.91	ex	-0.09	
2182	EN14372	14.30		0.22	
2184	in house	12.0	ex	-1.60	
2187	ASTM D3421:75	14.20	ex	0.14	
2190	in house	17.0	ex	2.36	
2196	ASTM D3421	9.3	ex	-3.74	
2197	LFBG B80.32	14.4	ex	0.30	
2201	EN14372:04	13.43		-0.47	
2212	in house	13.9107	ex	-0.09	
2215	in house	12.2	ex	-1.44	
2216	in house	11.27	ex	-2.18	
2222	in house	8.4	ex	-4.45	
2223	in house	7.34	ex	-5.29	
2225	EN14372	13.82		-0.16	
2226	EPA8270D / in house	11.42	ex	-2.06	
2229	in house	12.88	ex	-0.90	
2233	in house	13.10	ex	-0.73	
2234	EN14372:04	15.349		1.05	
2240	in house	9.604	ex	-3.50	
2242	In house	15.34	ex	1.05	
2310	EN14372	14.96		0.75	
2311	EN14372:04	14.8		0.62	
2350	EN14372	14.3		0.22	
2359	EN14372:04	13.00		-0.81	
2361	ASTM D3421:75	15	ex	0.78	
2363	EN14372:04	14.235		0.17	
2365	EN14372:04	14.212		0.15	
2366	EN14372:04	14.5		0.38	
2369	EN14372:04	13.817		-0.16	
2370	EN14372	14.9		0.70	
2371	EN14372:04	12.5		-1.20	
2372	EN14372:04	12.5		-1.20	
2375	EN14372:04	15.05		0.82	
2379	EN14372	14.72		0.56	
2380	EN14372	15.26		0.98	
2385	in house	14.3	ex	0.22	
3100	EN14372	12.3		-1.36	
3101	EN14372:04	14.178		0.13	
3107	EN14372	16.3	C	1.81	First reported <0.01
3110	EN14372:04	12.99		-0.82	
3116	in house	10.1	ex	-3.11	
3117	EN14372 MOD	10.4	ex	-2.87	
3134	in house	15.01	ex	0.79	
3150	in house	11.7	ex	-1.84	
3151	EN14372:04	15.0	C	0.78	First reported 53.5
3153	in house	11.65	ex	-1.88	
3154	in house	8.68	ex	-4.23	
3159	in house	10.1	ex	-3.11	
3161	in house	12.32	ex	-1.35	
3166	EPA8270D	16.7	ex	2.13	

3167	EN14372:04	14.5		0.38
3169	EN14372	13.6		-0.33
3172	in house	15.2	ex	0.94
3174	EN14372 MOD	9.391	ex	-3.67
3175	in house	11.80	ex	-1.76
3176	in house	17.658	ex	2.88
3179	in house	15.0	ex	0.78
3182	EN14372	13.9		-0.09
3185	EN14372:04	14.3		0.22
3191	in house	14.67	ex	0.52
3192	--	----		----
3195	in house	12.53	ex	-1.18
3199	in house	15.44	ex	1.13
3200	In house	9.24	ex	-3.79
3210	EN14372:04	14.5		0.38
3216	EN14372:04	15.182		0.92
3218	EN14372:04	13.46		-0.44
3220	In house	3.8	ex	-8.10
3222	prEN15777	7.839	ex	-4.90
3225	in house	12.3180	ex	-1.35
3228	in house	16	ex	1.57
3233	in house	7.73	ex	-4.98
3237	in house	10.75	ex	-2.59
3238	in house	10.8	ex	-2.55
3243	In house	14.41	ex,C	0.31
3246	in house	13.83	ex	-0.15
3248	in house	12.3	ex	-1.36
4095	in house	15.0	ex	0.78
8005	EN14372	9.8	G(0.05)	-3.34
8006	in house	10.3	ex	-2.95

First reported 4.91

	OK	not OK
normality	OK	not OK
n	35	100
outliers	2 (+65 ex)	2
mean (n)	14.019	13.152
st.dev. (n)	1.1071	2.3885
R(calc.)	3.100	6.688
R(EN14372:04)	3.533	3.314
R(Horwitz)	1.055	1.000

**ex:** For the determination of the assigned value (= mean(n)), only EN14372 data (using Soxhlet with Diethylether as extraction solvent) were used. Subsequently all test results were compared with this assigned value.



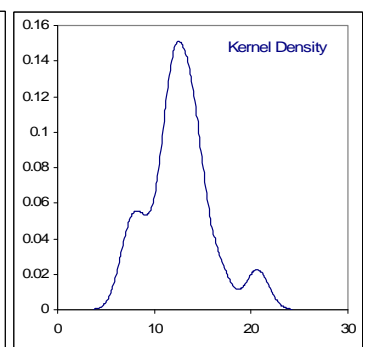
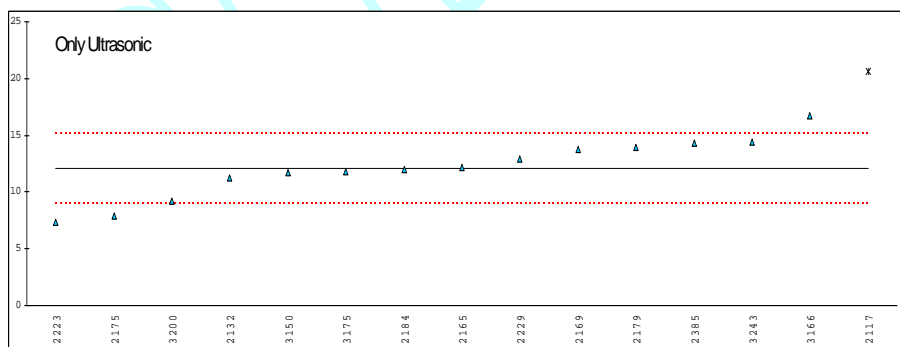
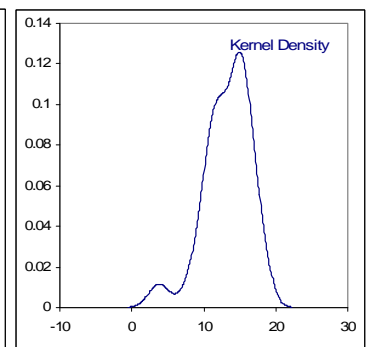
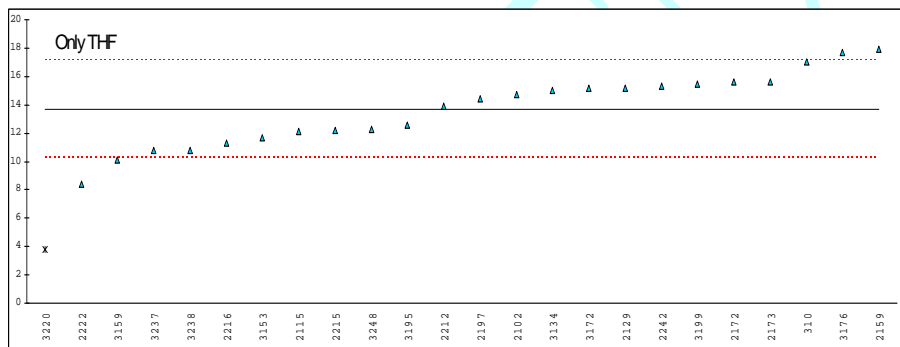
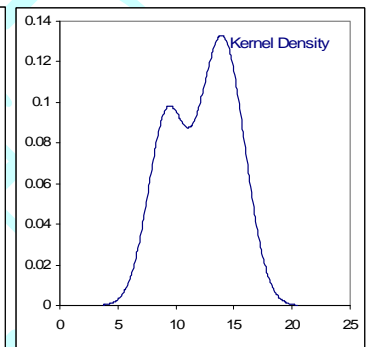
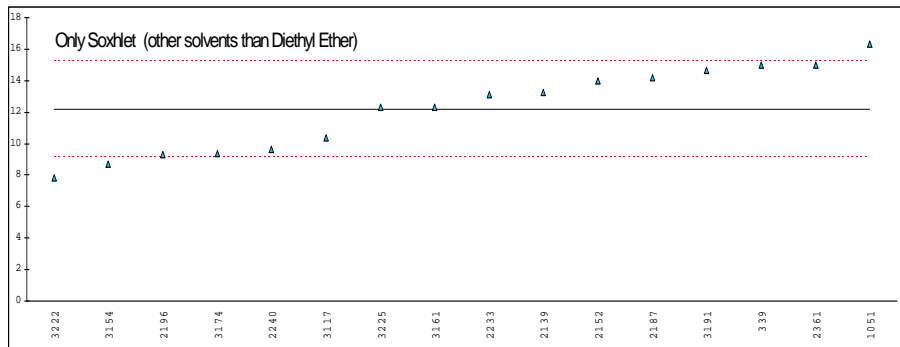
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CORRECTED



Determination of DBP on sample #0913; results in %M/M (continued)

	Only Soxhlet: EN14372 excluded	Only THF:	Only Ultrasonic:
normality	OK	OK	OK
n	16	23	14
outliers	0	1	1
mean (n)	12.211	13.699	12.095
st.dev. (n)	2.6521	2.5342	2.5933
R(calc.)	7.426	7.096	7.261
R(EN14372:04)	3.200	3.452	3.048
R(Horwitz)	0.938	1.035	0.931



## Determination of DEHP on sample #0913; results in %M/M

lab	method	value	mark *)	z(targ)	remarks
310	in house	5.9	ex	0.70	
330	in house	2.78	ex	-5.55	
339	in house	10.7	ex	10.30	
622	EN14372:04	6.2631		1.42	
840	EN14372:04	6.042		0.98	
1051	ASTM D3421	6.024	ex	0.94	
1124	EN14372:04	3.90		-3.31	
2102	in house	5.97	ex	0.84	
2115	in house	4.8	ex,C	-1.51	First reported 12.1
2117	in house	7.693	ex	4.28	
2129	in house	5.9	ex,C	0.70	First reported 6.44
2132	in house	5.034	ex	-1.04	
2137	EN147372:04	3.994		-3.12	
2139	in house	4.200	ex	-2.71	
2152	--	5.58	ex	0.06	
2156	EN14372 MOD	5.283		-0.54	
2159	in house	8.07	ex	5.04	
2165	in house	5.451	ex	-0.20	
2166	in house	1.8	G(0.01)	-7.51	
2169	in house	5.392	ex	-0.32	
2172	in house	5.60	ex	0.10	
2173	in house	6.228	ex	1.35	
2175	EPA3550C/8270D	4.61	ex	-1.89	
2179	in house	5.792	ex	0.48	
2182	EN14372	4.75	ex	-1.61	
2184	in house	5.47		-0.17	
2187	ASTM D3421:75	5.29	ex	-0.53	
2190	in house	11.9	ex	12.70	
2196	ASTM D3421	4.9	ex	-1.31	
2197	LFBG B80.32	6.26	ex	1.42	
2201	EN14372:04	5.66		0.22	
2212	in house	5.5823	ex	0.06	
2215	in house	5.0	ex	-1.11	
2216	in house	5.23	ex	-0.65	
2222	in house	3	ex	-5.11	
2223	in house	5.33	ex	-0.45	
2225	EN14372	5.56		0.02	
2226	EPA8270D / in house	4.15	ex	-2.81	
2229	in house	5.08	ex	-0.95	
2233	in house	5.50	ex	-0.11	
2234	EN14372:04	4.809		-1.49	
2240	in house	3.831	ex	-3.44	
2242	In house	5.878	ex	0.65	
2310	EN14372	6.33		1.56	
2311	EN14372:04	6.45		1.80	
2350	EN14372	5.37		-0.37	
2359	EN14372:04	5.39		-0.33	
2361	ASTM D3421:75	6.4	ex	1.70	
2363	EN14372:04	5.900		0.70	
2365	EN14372:04	5.785		0.47	
2366	EN14372:04	5.77		0.44	
2369	EN14372:04	5.795		0.49	
2370	EN14372	5.25		-0.61	
2371	EN14372:04	6.24		1.38	
2372	EN14372:04	6.26		1.42	
2375	EN14372:04	6.1		1.10	
2379	EN14372	5.79		0.48	
2380	EN14372	5.31		-0.49	
2385	in house	5.6	ex	0.10	
3100	EN14372	4.54		-2.03	
3101	EN14372:04	5.058		-0.99	First reported <0.01
3107	EN14372	7.3	C	3.50	
3110	EN14372:04	5.29		-0.53	
3116	in house	6.7	ex	2.30	
3117	EN14372 MOD	4.81	ex	-1.49	
3134	in house	6.02	ex	0.94	
3150	in house	5.17	ex,C	-0.77	First reported 29.0
3151	EN14372:04	5.8	C	0.50	
3153	in house	5.12	ex,C	-0.87	First reported 2.13
3154	in house	2.39	ex	-6.33	
3159	in house	3.85	ex	-3.41	
3161	in house	5.80	ex	0.50	
3166	EPA8270D	6.86	ex	2.62	

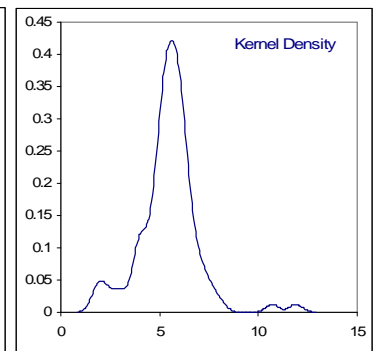
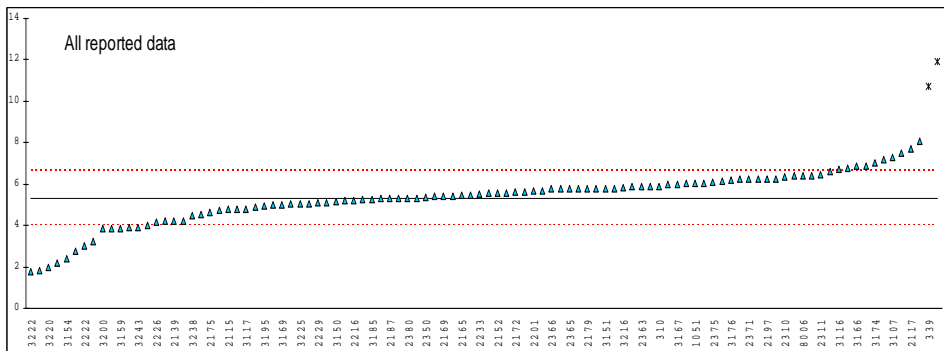
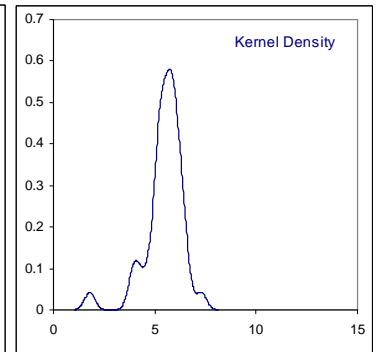
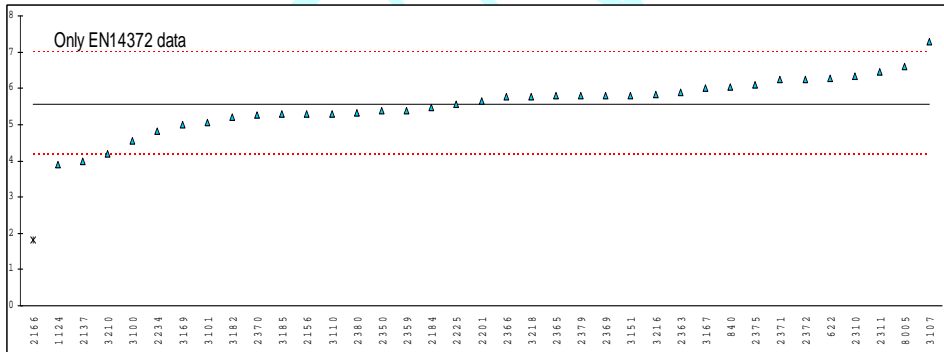
3167	EN14372:04	6.00		0.90
3169	EN14372	5.00		-1.11
3172	in house	7.2	ex	3.30
3174	EN14372 MOD	7.019	ex	2.93
3175	in house	2.19	ex	-6.73
3176	in house	6.18	ex	1.26
3179	in house	6.88	ex	2.66
3182	EN14372	5.2		-0.71
3185	EN14372:04	5.28		-0.55
3191	in house	5.677	ex	0.25
3192	--	----	ex	----
3195	in house	4.97	ex	-1.17
3199	in house	6.15	ex	1.20
3200	In house	3.83	ex	-3.45
3210	EN14372:04	4.20		-2.71
3216	EN14372:04	5.840		0.58
3218	EN14372:04	5.78		0.46
3220	In house	2.0	ex,C	-7.11
3222	prEN15777	1.793	ex	-7.52
3225	in house	5.0411	ex	-1.02
3228	in house	7.52	ex	3.94
3233	in house	3.21	ex	-4.69
3237	in house	5.42	ex	-0.27
3238	in house	4.5	ex	-2.11
3243	In house	3.91	ex	-3.29
3246	in house	6.78	ex	2.46
3248	in house	4.21	ex	-2.69
4095	in house	6.40	ex	1.70
8005	EN14372	6.6		2.10
8006	in house	6.4	ex	1.70

First reported 1.996

Compare all results reported

normality	OK	not OK
n	36	100
outliers	1 (+ 65 ex)	2
mean (n)	5.552	5.332
st.dev. (n)	0.7297	1.2277
R(calc.)	2.043	3.438
R(EN14372:04)	1.399	1.344
R(Horwitz)	0.481	0.464

**ex:** For the determination of the assigned value (= mean(n)), only EN14372 data (using Soxhlet with Diethylether as extraction solvent) were used. Subsequently all test results were compared with this assigned value.

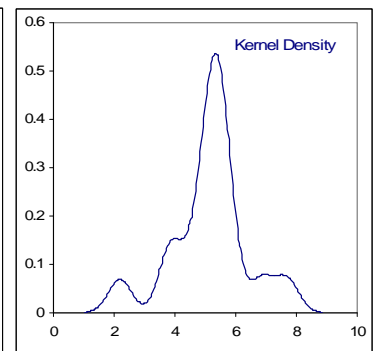
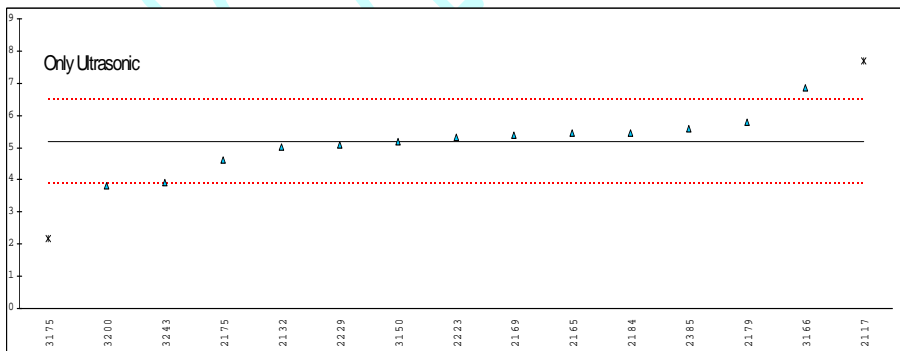
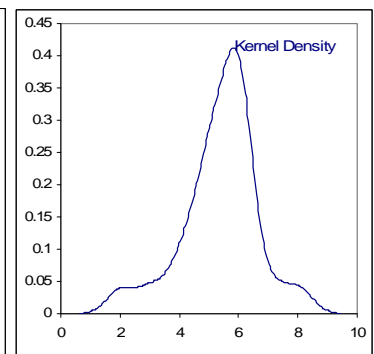
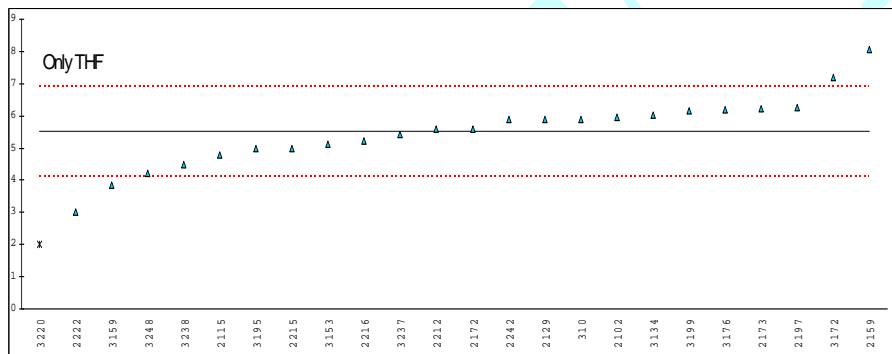
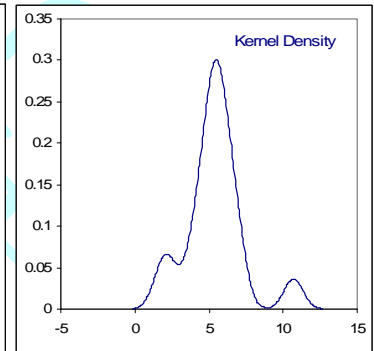
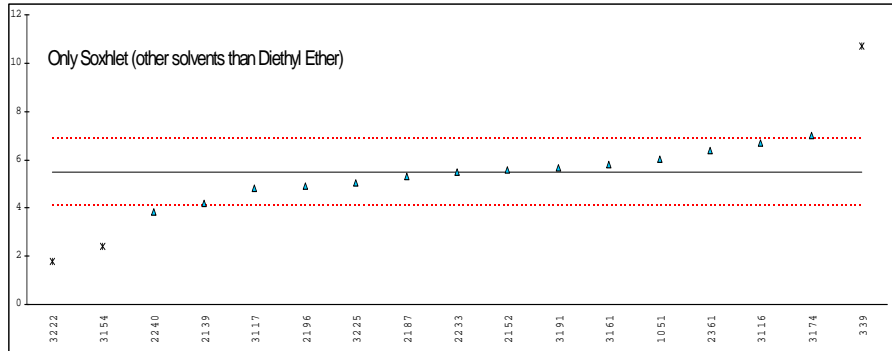


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CORRECTED

Determination of DEHP on sample #0913; results in %M/M (continued)

	Only Soxhlet: EN14372 excluded	Only THF:	Only Ultrasonic:
normality	OK	OK	OK
n	14	23	13
outliers	3	1	2
mean (n)	5.484	5.523	5.195
st.dev. (n)	0.8997	1.0730	0.7846
R(calc.)	2.519	3.004	2.197
R(EN14372:04)	1.382	1.392	1.309
R(Horwitz)	0.523	0.526	0.499



## Determination of BBP, DIDP and DNOP on sample #0913; results in %M/M

lab	method	BBP	remark	DIDP	remark	DNOP	remark
310	in house	<0.1		<0.1		<0.1	
330	in house	<0.01		<0.02		<0.02	
339	in house	<0.01		<0.05		<0.01	
622	EN14372:04	nd		nd		nd	
840	EN14372:04	nd		nd		nd	
1051	ASTM D3421	<0.005		<0.005		<0.005	
1124	EN14372:04	0		0		0	
2102	in house	----		----		----	
2115	in house	nd		nd		nd	
2117	in house	----		----		----	
2129	in house	----		----		----	
2132	in house	<0.005		<0.005		<0.005	
2137	EN147372:04	<0.01		<0.01		<0.01	
2139	in house	nd		nd		nd	
2152	--	----		----		----	
2156	EN14372 MOD	nd	Fr. 0.010	nd	Fr. 0.010	nd	Fr. 0.010
2159	in house	<0.005		<0.005		<0.005	
2165	in house	nd		nd		nd	
2166	in house	nd		nd		nd	
2169	in house	<0.01		<0.01		<0.01	
2172	in house	nd		nd		nd	
2173	in house	----		----		----	
2175	EPA3550C/8270D	<0.0025		<0.0025		<0.0025	
2179	in house	nd		nd		nd	
2182	EN14372	<0.01		<0.01		<0.01	
2184	in house	nd		nd		nd	
2187	ASTM D3421:75	<0.01		<0.01		<0.01	
2190	in house	<0.01		<0.01		<0.01	
2196	ASTM D3421	<0.01		<0.01		<0.01	
2197	LFBG B80.32	nd		nd		nd	
2201	EN14372:04	<0.01		<0.01		<0.01	
2212	in house	----		----		----	
2215	in house	<0.005		<0.005		<0.005	
2216	in house	----		----		----	
2222	in house	----		----		----	
2223	in house	<0.001		<0.01		<0.001	
2225	EN14372	<0.005		<0.01		<0.01	
2226	EPA8270D	----		----		----	
2229	in house	<0.01		<0.02		<0.02	
2233	in house	0		0		0	
2234	EN14372:04	<0.005		<0.01		<0.005	
2240	in house	<0.005		<0.010		<0.005	
2242	In house	----		----		----	
2310	EN14372	<0.01		<0.01		<0.01	
2311	EN14372:04	<0.01		<0.01		<0.01	
2350	EN14372	nd		nd		nd	
2359	EN14372:04	<0.003		<0.010		<0.003	
2361	ASTM D3421:75	<0.003		<0.01		<0.003	
2363	EN14372:04	nd		nd		nd	
2365	EN14372:04	nd		nd		nd	
2366	EN14372:04	nd		nd		nd	
2369	EN14372:04	<0.003		<0.010		<0.003	
2370	EN14372	nd		nd		nd	
2371	EN14372:04	nd		nd		nd	
2372	EN14372:04	nd		nd		nd	
2375	EN14372:04	nd		nd		nd	
2379	EN14372	nd		nd		nd	
2380	EN14372	nd		nd		nd	
2385	in house	<0.01		<0.02		<0.01	
3100	EN14372	<0.01		<0.01		<0.01	
3101	EN14372:04	<0.01	Fr. 7.3	<0.01		<0.01	
3107	EN14372	<0.01		<0.01		<0.01	
3110	EN14372:04	<0.01		<0.01		<0.01	
3116	in house	----		----		----	
3117	EN14372 MOD	----		----		----	
3134	in house	<0.00028		<0.0006		<0.00014	
3150	in house	----		----		----	
3151	EN14372:04	<0.005		<0.005		<0.005	
3153	in house	<0.01		<0.01		<0.01	
3154	in house	----		----		----	
3159	in house	<0.005		<0.005		<0.005	
3161	in house	----		----		----	
3166	EPA8270D	----		----		----	

3167	EN14372:04	<0.005	<0.01	<0.005
3169	EN14372	<0.001	<0.01	<0.001
3172	in house	<0.01	<0.01	<0.01
3174	EN14372 MOD	0.016	0.005	0.002
3175	in house	<0.01	<0.01	<0.01
3176	in house	----	----	----
3179	in house	nd	nd	nd
3182	EN14372	<0.01	<0.01	<0.01
3185	EN14372:04	<0.01	<0.01	<0.01
3191	in house	<0.01	<0.01	<0.01
3192	--	----	----	----
3195	in house	----	----	----
3199	in house	<0.005	<0.005	<0.005
3200	In house	nd	nd	nd
3210	EN14372:04	<0.05	<0.05	<0.05
3216	EN14372:04	nd	nd	nd
3218	EN14372:04	nd	nd	nd
3220	In house	nd	nd	nd
3222	prEN15777	----	----	----
3225	in house	<0.005	<0.005	<0.005
3228	in house	nd	nd	nd
3233	in house	----	----	----
3237	in house	----	----	----
3238	in house	----	----	----
3243	In house	nd	nd	nd
3246	in house	nd	nd	nd
3248	in house	<0.030	<0.030	<0.030
4095	in house	----	----	----
8005	EN14372	----	----	----
8006	in house	----	----	----
	normality	n.a.	n.a.	n.a.
	n	3	3	3
	outliers	n.a.	n.a.	n.a.
	mean (n)	n.a.	n.a.	n.a.
	st.dev. (n)	n.a.	n.a.	n.a.
	R(calc.)	n.a.	n.a.	n.a.
	R(EN14372:04)	n.a.	n.a.	n.a.

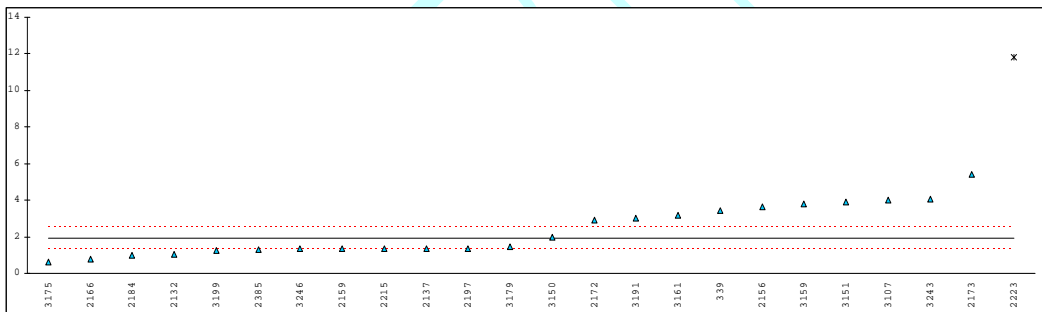
## Determination of other phthalates on sample #0913; results in %M/M

lab	method	value	mark	z(targ)	remarks
310	in house	----		----	
330	in house	----		----	
339	in house	3.41		5.20	DIBP
622	EN14372:04	----		----	
840	EN14372:04	----		----	
1051	ASTM D3421	----		----	
1124	EN14372:04	----		----	
2102	in house	----		----	
2115	in house	----		----	
2117	in house	----		----	
2129	in house	----		----	
2132	in house	1.047		-6.10	DIBP
2137	EN147372:04	1.359		-4.61	DIBP
2139	in house	----		----	
2152	--	----		----	
2156	EN14372 MOD	3.620		6.20	DIBP
2159	in house	1.334		-4.73	DIBP
2165	in house	----		----	
2166	in house	0.8		-7.28	DIBP
2169	in house	----		----	
2172	in house	2.91		2.81	Sum of the weight for both colours of #0913, DIBP=1.39
2173	in house	5.411		14.77	DIBP=1.598 and butylisobutylphthalate=3.813
2175	EPA3550C/8270D	----		----	
2179	in house	----		----	
2182	EN14372	----		----	
2184	in house	0.965		-6.50	DIBP
2187	ASTM D3421:75	----		----	
2190	in house	----		----	
2196	ASTM D3421	----		----	
2197	LFBG B80.32	1.36		-4.61	DIBP
2201	EN14372:04	----		----	
2212	in house	----		----	
2215	in house	1.35		-4.65	DIBP
2216	in house	----		----	
2222	in house	----		----	
2223	in house	11.79	G(0.01)	45.28	DIBP
2225	EN14372	----		----	
2226	EPA8270D / in house	----		----	
2229	in house	----		----	
2233	in house	----		----	
2234	EN14372:04	----		----	
2240	in house	----		----	
2242	In house	----		----	
2310	EN14372	----		----	
2311	EN14372:04	----		----	
2350	EN14372	----		----	
2359	EN14372:04	nd		----	
2361	ASTM D3421:75	----		----	
2363	EN14372:04	nil		----	
2365	EN14372:04	nil		----	
2366	EN14372:04	----		----	
2369	EN14372:04	----		----	
2370	EN14372	----		----	
2371	EN14372:04	none		----	
2372	EN14372:04	none		----	
2375	EN14372:04	----		----	
2379	EN14372	nd		----	
2380	EN14372	----		----	
2385	in house	1.3		-4.89	DIBP
3100	EN14372	----		----	
3101	EN14372:04	<0.01		----	
3107	EN14372	4.0		8.02	DIBP=1.3 and butylisobutylphthalate=2.7
3110	EN14372:04	----		----	
3116	in house	----		----	
3117	EN14372 MOD	----		----	
3134	in house	----		----	
3150	in house	2.0		-1.54	DIBP
3151	EN14372:04	3.9	C	7.54	First reported 17.4, DIBP: 2 isomers
3153	in house	----		----	
3154	in house	----		----	
3159	in house	3.79		7.02	DIBP=1.36 and butylisobutylphthalate=2.43
3161	in house	3.18		4.10	DIBP
3166	EPA8270D	----		----	

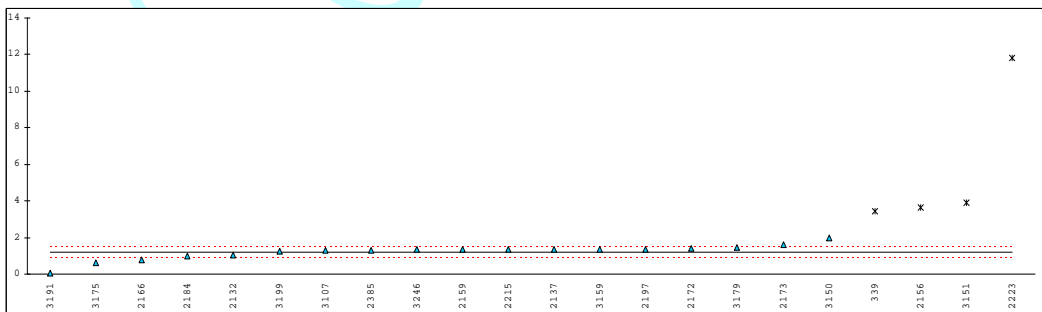
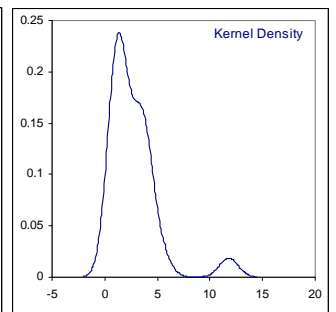


3167	EN14372:04	----	----
3169	EN14372	----	----
3172	in house	----	----
3174	EN14372 MOD	----	----
3175	in house	0.64	-8.05 DIBP
3176	in house	----	----
3179	in house	1.44	-4.22 DIBP
3182	EN14372	----	----
3185	EN14372:04	----	----
3191	in house	3.002	3.25 DIBP=0.056 and butylisobutylphthalate=2.046
3192	--	----	----
3195	in house	----	----
3199	in house	1.23	-5.23 DIBP
3200	In house	----	----
3210	EN14372:04	----	----
3216	EN14372:04	----	----
3218	EN14372:04	----	----
3220	In house	nd	----
3222	prEN15777	----	----
3225	in house	----	----
3228	in house	----	----
3233	in house	----	----
3237	in house	----	----
3238	in house	----	----
3243	In house	4.05	8.26
3246	in house	1.33	-4.75 DIBP
3248	in house	----	----
4095	in house	----	----
8005	EN14372	----	----
8006	in house	----	----

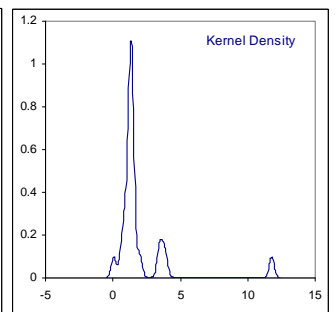
normality	not OK	<u>Only DIBP:</u> not OK
n	23	18
outliers	1	1
mean (n)	2.323	1.214
st.dev. (n)	1.3633	0.4133
R(calc.)	3.817	1.157
R(EN14372:04)	0.585	0.306



All reported results



Only DIBP results



## Determination of DBP on sample #0914; results in %M/M

lab	method	value	mark *)	z(targ)	remarks
310	in house	0.253	ex	0.86	
330	in house	0.12	ex	-5.43	
339	in house	0.198	ex	-1.74	
622	EN14372:04	0.2773		2.01	
840	EN14372:04	0.258		1.09	
1051	ASTM D3421	0.218	ex	-0.80	
1124	EN14372:04	0.19		-2.12	
2102	in house	0.138	ex	-4.58	
2115	in house	0.2	ex	-1.65	
2117	in house	0.021	ex	-10.12	
2129	in house	0.24	ex,C	0.24	First reported 0.33
2132	in house	0.189	ex	-2.17	
2137	EN147372:04	0.292		2.70	
2139	in house	0.213	ex	-1.03	
2152	--	0.23	ex	-0.23	
2156	EN14372 MOD	0.154		-3.83	
2159	in house	0.1781	ex	-2.69	
2165	in house	0.226	ex	-0.42	
2166	in house	0.20		-1.65	
2169	in house	0.2823	ex,C	2.24	First reported 0.0651
2172	in house	0.0585	ex	-8.34	
2173	in house	0.2414	ex	0.31	
2175	EPA3550C/8270D	0.24	ex	0.24	
2179	in house	0.200	ex	-1.65	
2182	EN14372	0.21		-1.18	
2184	in house	0.212	ex	-1.08	
2187	ASTM D3421:75	0.25	ex	0.72	
2190	in house	0.18	ex	-2.60	
2196	ASTM D3421	0.13	ex	-4.96	
2197	LFBG B80.32	0.23	ex	-0.23	
2201	EN14372:04	0.25		0.72	
2212	in house	----	ex	----	
2215	in house	0.060	ex	-8.27	
2216	in house	----	ex	----	
2222	in house	0.02	ex	-10.16	
2223	in house	----	ex	----	
2225	EN14372	0.255		0.95	
2226	EPA8270D / in house	0.15	ex	-4.01	
2229	in house	0.22	ex	-0.70	
2233	in house	0.26	ex	1.19	
2234	EN14372:04	0.281		2.18	
2240	in house	0.128	ex	-5.06	
2242	In house	0.2818	ex	2.22	
2310	EN14372	0.225		-0.47	
2311	EN14372:04	0.23		-0.23	
2350	EN14372	0.25		0.72	
2359	EN14372:04	0.227		-0.37	
2361	ASTM D3421:75	0.24	ex	0.24	
2363	EN14372:04	0.253		0.86	
2365	EN14372:04	0.255		0.95	
2366	EN14372:04	0.256		1.00	
2369	EN14372:04	0.247		0.57	
2370	EN14372	0.237		0.10	
2371	EN14372:04	0.284		2.32	
2372	EN14372:04	0.253		0.86	
2375	EN14372:04	0.206		-1.37	
2379	EN14372	0.23		-0.23	
2380	EN14372	0.22		-0.70	
2385	in house	0.25	ex	0.72	
3100	EN14372	0.22		-0.70	
3101	EN14372:04	0.233		-0.09	
3107	EN14372	0.22	C	-0.70	First reported 0.19
3110	EN14372:04	0.214		-0.99	
3116	in house	0.10	ex	-6.38	
3117	EN14372 MOD	0.19	ex	-2.12	
3134	in house	0.28	ex	2.14	
3150	in house	0.0054	ex	-10.86	False negative result?
3151	EN14372:04	0.11	C,G(0.01)	-5.91	First reported 42.4
3153	in house	0.251	ex	0.76	
3154	in house	0.23	ex	-0.23	
3159	in house	0.098	ex,C	-6.47	First reported 0.065
3161	in house	0.25	ex	0.72	
3166	EPA8270D	0.0206	ex	-10.14	

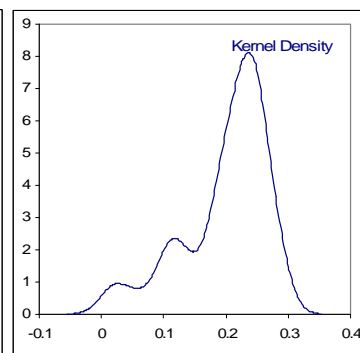
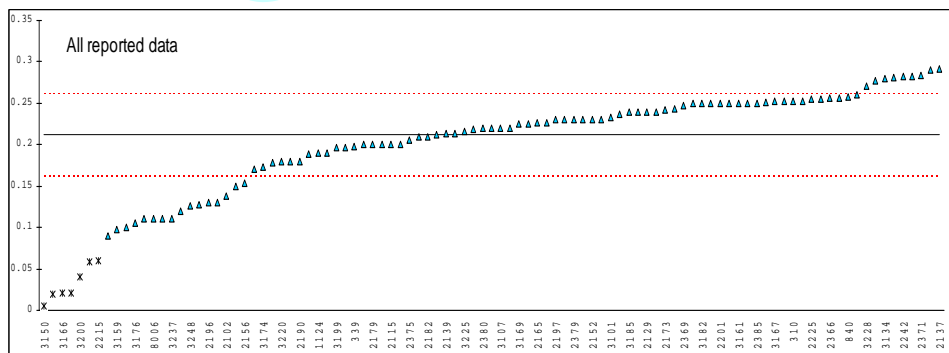
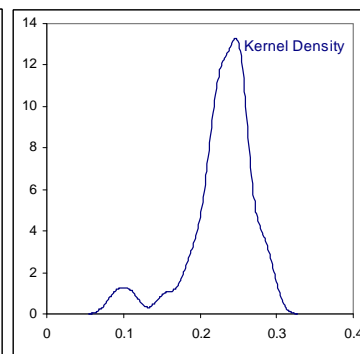
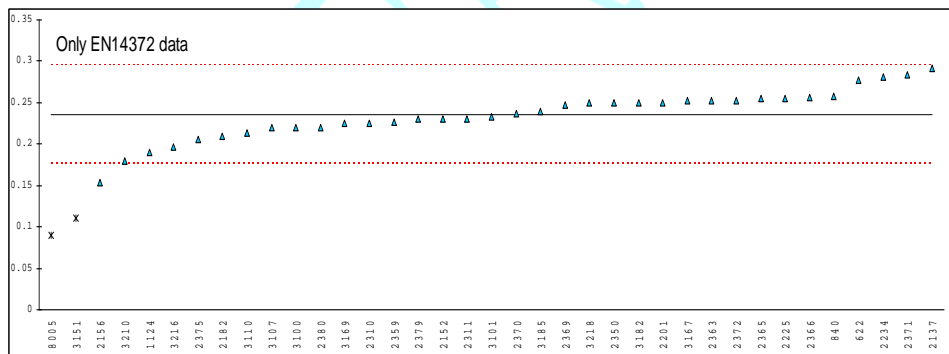
3167	EN14372:04	0.252		0.81
3169	EN14372	0.225		-0.47
3172	in house	0.21	ex	-1.18
3174	EN14372 MOD	0.173	ex	-2.93
3175	in house	0.29	ex	2.61
3176	in house	0.105	ex	-6.14
3179	in house	0.243	ex	0.38
3182	EN14372	0.25		0.72
3185	EN14372:04	0.24		0.24
3191	in house	0.256	ex	1.00
3192	--	----		----
3195	in house	0.171	ex,C	-3.02
3199	in house	0.196	ex	-1.84
3200	In house	0.04	ex	-9.22
3210	EN14372:04	0.18		-2.60
3216	EN14372:04	0.196		-1.84
3218	EN14372:04	0.25		0.72
3220	In house	0.18	ex	-2.60
3222	prEN15777	0.200	ex	-1.65
3225	in house	0.2157	ex	-0.91
3228	in house	0.27	ex	1.66
3233	in house	0.20	ex	-1.65
3237	in house	0.11	ex	-5.91
3238	in house	0.13	ex	-4.96
3243	In house	0.23	ex,C	-0.23
3246	in house	0.25	ex	0.72
3248	in house	0.126	ex	-5.15
4095	in house	0.11	ex	-5.91
8005	EN14372	0.09	G(0.05)	-6.85
8006	in house	0.11	ex	-5.91

First reported 0.031

First reported 0.049

normality	OK		not OK
n	35		92
outliers	2	(+ 62 ex)	7
mean (n)	0.235		0.212
st.dev. (n)	0.0300		0.0513
R(calc.)	0.084		0.144
R(EN14372)	0.059		0.050
R(Horwitz)	0.033		0.028

**ex:** For the determination of the assigned value (= mean(n)), only EN14372 data (using Soxhlet with Diethylether as extraction solvent) were used. Subsequently all test results were compared with this assigned value.

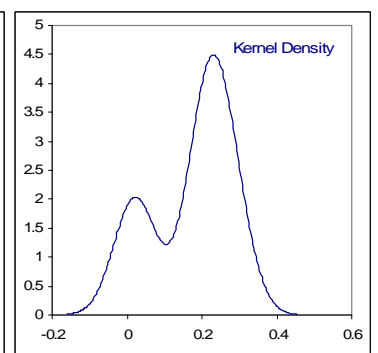
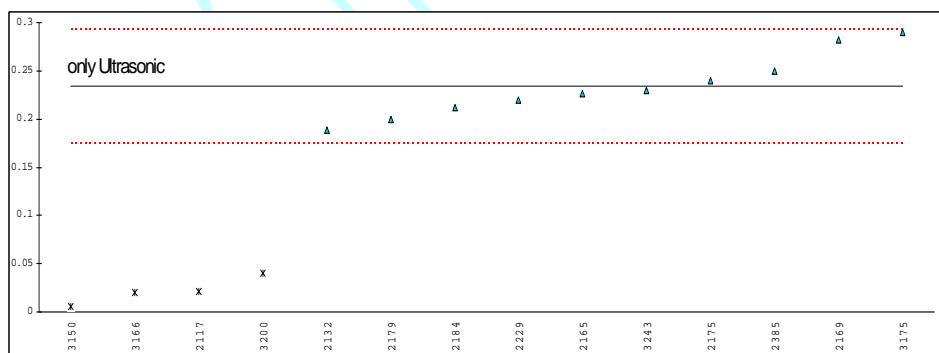
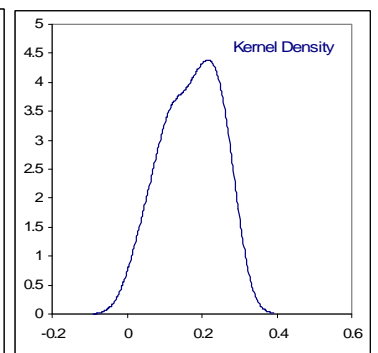
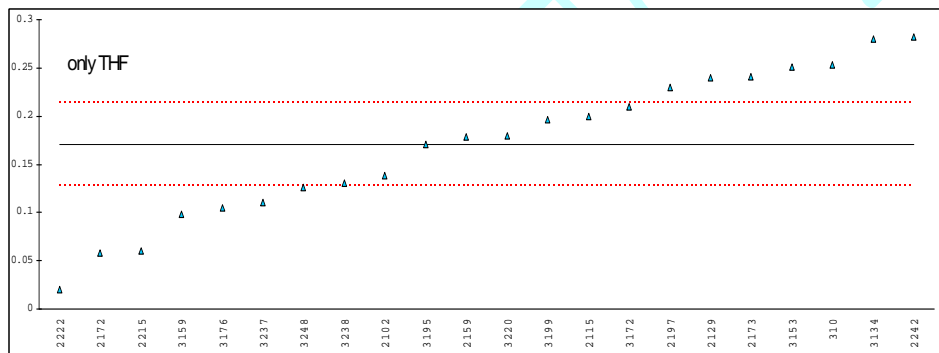
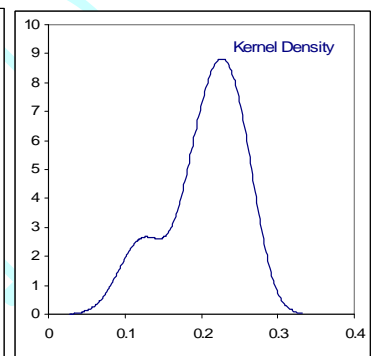
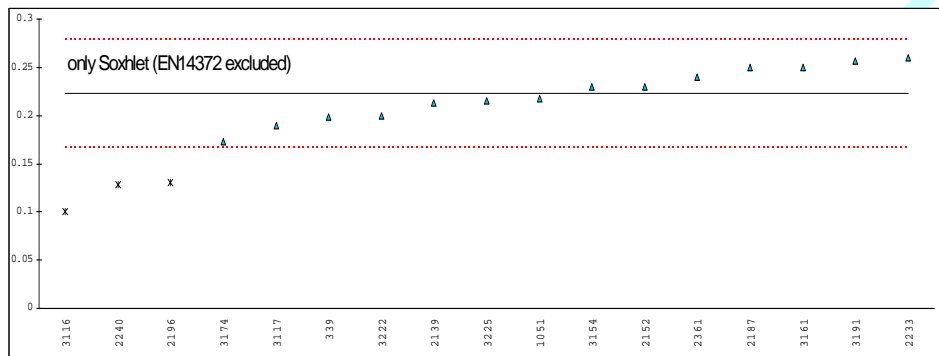


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CORRECTED

Determination of DBP on sample #0914; results in %M/M (continued)

	Only Soxhlet: EN14372 excluded	Only THF:	Only Ultrasonic:
normality	OK	OK	OK
n	14	22	10
outliers	3	0	4
mean (n)	0.223	0.171	0.234
st.dev. (n)	0.0266	0.0755	0.0328
R(calc.)	0.075	0.211	0.092
R(EN14372:04)	0.056	0.043	0.059
R(Horwitz)	0.031	0.025	0.033



## Determination of BBP on sample #0914; results in %M/M

lab	method	value	mark *)	z(targ)	remarks
310	in house	0.238	ex	1.24	
330	in house	0.11	ex	-5.40	
339	in house	0.160	ex	-2.81	
622	EN14372:04	0.2710		2.96	
840	EN14372:04	0.231		0.88	
1051	ASTM D3421	0.221	ex	0.36	
1124	EN14372:04	0.20		-0.73	
2102	in house	0.120	ex	-4.88	
2115	in house	0.2	ex	-0.73	
2117	in house	0.022	ex	-9.97	
2129	in house	0.19	C	-1.25	First reported 0.14
2132	in house	0.166	ex	-2.49	
2137	EN147372:04	0.286		3.73	
2139	in house	0.214	ex	0.00	
2152	--	0.25	ex	1.87	
2156	EN14372 MOD	0.128		-4.47	
2159	in house	0.1658	ex	-2.50	
2165	in house	0.228	ex	0.72	
2166	in house	0.14		-3.84	
2169	in house	0.2931	ex,C	4.10	First reported 0.0564
2172	in house	0.0506	ex	-8.48	
2173	in house	0.2329	ex	0.98	
2175	EPA3550C/8270D	0.22	ex	0.31	
2179	in house	0.210	ex	-0.21	
2182	EN14372	0.22		0.31	
2184	in house	0.201	ex	-0.68	
2187	ASTM D3421:75	0.24	ex	1.35	
2190	in house	0.19	ex	-1.25	
2196	ASTM D3421	0.20	ex	-0.73	
2197	LFBG B80.32	0.21	ex	-0.21	
2201	EN14372:04	0.22		0.31	
2212	in house	----	ex	----	
2215	in house	0.053	ex	-8.36	
2216	in house	----	ex	----	
2222	in house	0.04	ex	-9.03	
2223	in house	----	ex	----	
2225	EN14372	0.235		1.09	
2226	EPA8270D / in house	0.13	ex	-4.36	
2229	in house	0.18	ex	-1.77	
2233	in house	0.22	ex	0.31	
2234	EN14372:04	0.194		-1.04	
2240	in house	0.116	ex	-5.09	
2242	In house	0.2673	ex	2.76	
2310	EN14372	0.198		-0.83	
2311	EN14372:04	0.19		-1.25	
2350	EN14372	0.23		0.83	
2359	EN14372:04	0.239		1.29	
2361	ASTM D3421:75	0.22	ex	0.31	
2363	EN14372:04	0.238		1.24	
2365	EN14372:04	0.245		1.61	
2366	EN14372:04	0.230		0.83	
2369	EN14372:04	0.235		1.09	
2370	EN14372	0.201		-0.68	
2371	EN14372:04	0.241		1.40	
2372	EN14372:04	0.237		1.19	
2375	EN14372:04	0.199		-0.78	
2379	EN14372	0.20		-0.73	
2380	EN14372	0.19		-1.25	
2385	in house	0.25	ex	1.87	
3100	EN14372	0.18		-1.77	
3101	EN14372:04	0.218		0.20	
3107	EN14372	0.19	C	-1.25	First reported 0.13
3110	EN14372:04	0.203		-0.57	
3116	in house	0.09	ex	-6.44	
3117	EN14372 MOD	0.18	ex	-1.77	
3134	in house	0.24	ex	1.35	
3150	in house	0.0048	ex	-10.86	False negative result?
3151	EN14372:04	0.093	C,G(0.05)	-6.28	First reported 39.6
3153	in house	0.227	ex	0.67	
3154	in house	0.22	ex	0.31	
3159	in house	0.096	ex,C	-6.13	First reported 0.059
3161	in house	0.24	ex	1.35	
3166	EPA8270D	0.0142	ex	-10.37	

3167	EN14372:04	0.252		1.97
3169	EN14372	0.220		0.31
3172	in house	0.23	ex	0.83
3174	EN14372 MOD	0.180	ex	-1.77
3175	in house	0.26	ex	2.38
3176	in house	0.09	ex	-6.44
3179	in house	0.272	ex	3.01
3182	EN14372	0.24		1.35
3185	EN14372:04	0.23		0.83
3191	in house	0.231	ex	0.88
3192	--	----		----
3195	in house	0.161	ex,C	-2.75
3199	in house	0.174	ex	-2.08
3200	In house	0.03	ex	-9.55
3210	EN14372:04	0.13		-4.36
3216	EN14372:04	0.201		-0.68
3218	EN14372:04	0.23		0.83
3220	In house	0.16	ex	-2.81
3222	prEN15777	0.224	ex	0.52
3225	in house	0.2616	ex	2.47
3228	in house	0.269	ex	2.85
3233	in house	0.11	ex	-5.40
3237	in house	----	ex	----
3238	in house	0.12	ex	-4.88
3243	In house	0.05	ex,C	-8.52
3246	in house	0.24	ex	1.35
3248	in house	0.106	ex	-5.61
4095	in house	0.092	ex	-6.34
8005	EN14372	0.11	G(0.05)	-5.40
8006	in house	0.09	ex	-6.44

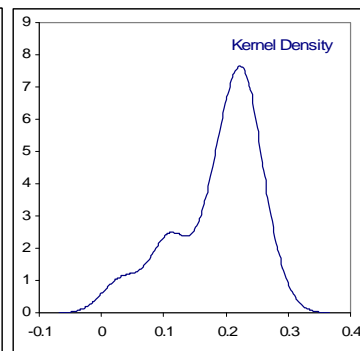
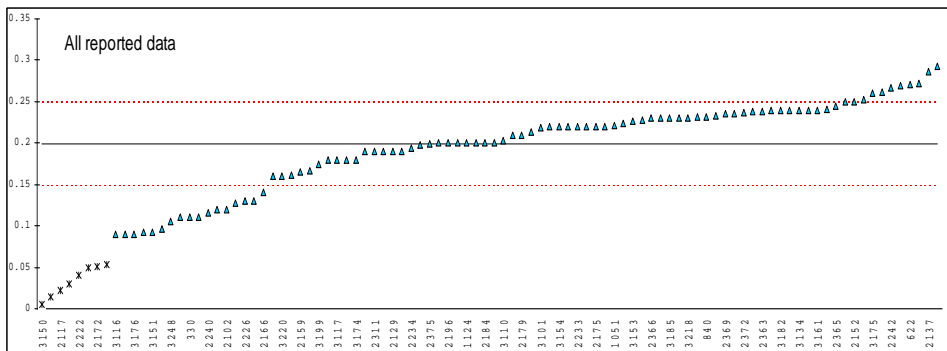
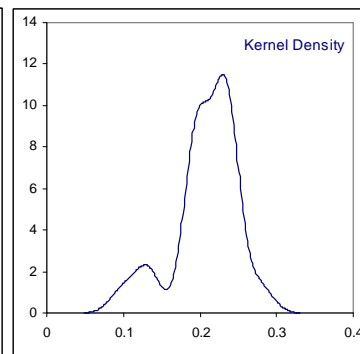
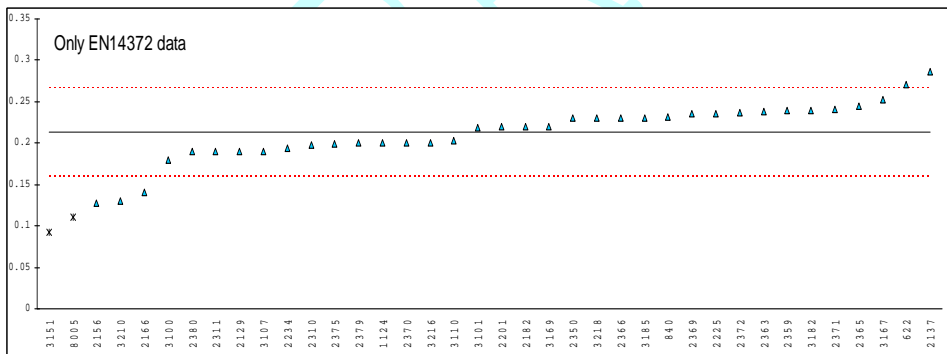
First reported 0.027

First reported 0.025

Compare all reported results

normality	OK		not OK
n	35		90
outliers	2	(+ 61 ex)	8
mean (n)	0.214		0.199
st.dev. (n)	0.0347		0.0515
R(calc.)	0.097		0.144
R(EN14372:04)	0.054		0.050
R(Horwitz)	0.030		0.030

**ex:** For the determination of the assigned value (= mean(n)), only EN14372 data (using Soxhlet with Diethylether as extraction solvent) were used. Subsequently all test results were compared with this assigned value.



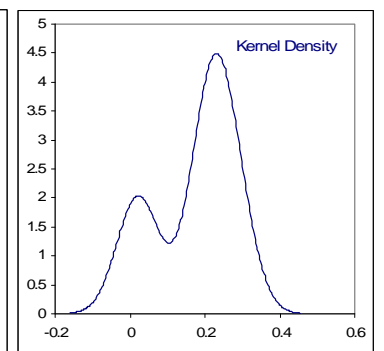
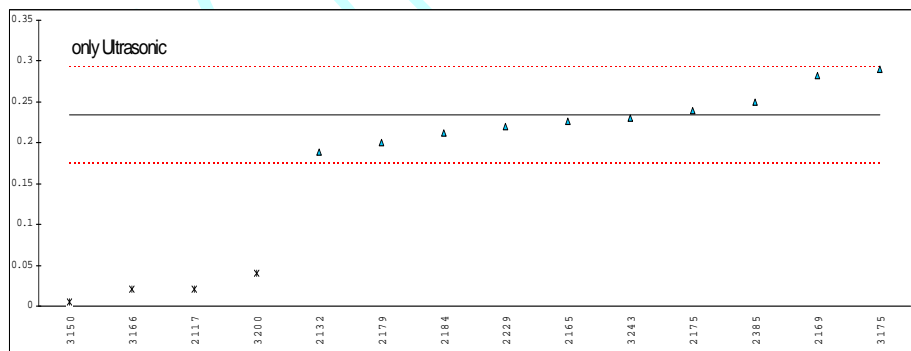
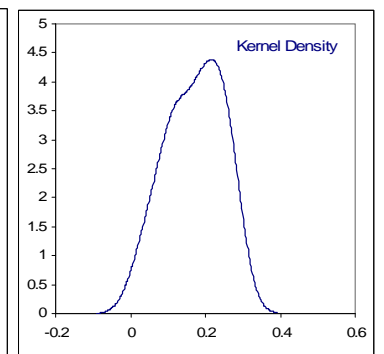
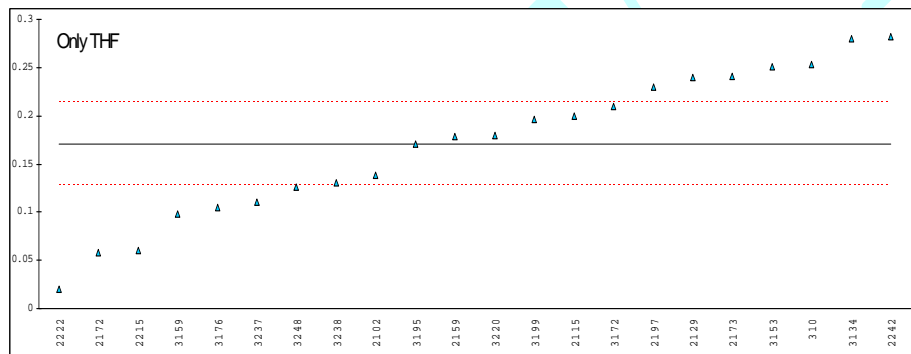
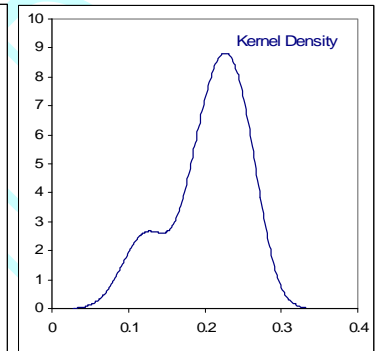
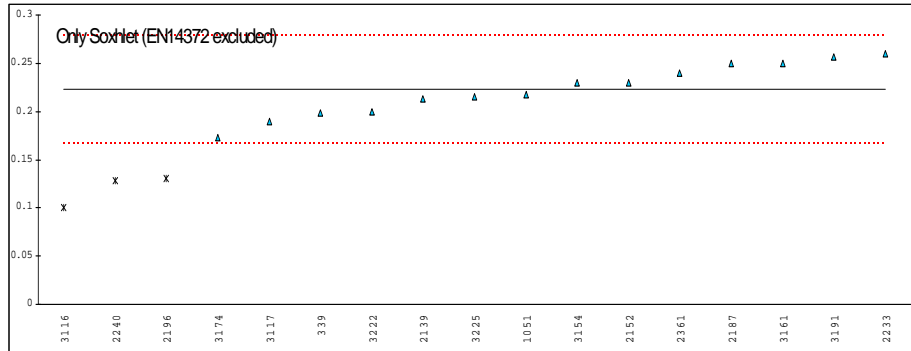
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CORRECTED



Determination of BBP on sample #0914; results in %M/M (continued)

	Only Soxhlet: EN14372 excluded	Only THF:	Only Ultrasonic:
normality	OK	OK	OK
n	14	22	10
outliers	3	0	4
mean (n)	0.223	0.171	0.234
st.dev. (n)	0.0266	0.0755	0.0328
R(calc.)	0.075	0.211	0.092
R(EN14372:04)	0.056	0.043	0.059
R(Horwitz)	0.031	0.0250	0.033



## Determination of DEHP on sample #0914; results in %M/M

lab	method	value	mark *)	z(targ)	remarks
310	in house	0.131	ex	1.75	
330	in house	0.055	ex	-5.71	
339	in house	0.077	ex	-3.55	
622	EN14372:04	0.1792		6.48	
840	EN14372:04	0.105		-0.80	
1051	ASTM D3421	0.110	ex	-0.31	
1124	EN14372:04	0.089		-2.37	
2102	in house	0.061	ex	-5.12	
2115	in house	0.1	ex	-1.29	
2117	in house	0.009	ex	-10.23	
2129	in house	0.10	C	-1.29	First reported 0.09
2132	in house	0.087	ex	-2.57	
2137	EN147372:04	0.138		2.44	
2139	in house	0.104	ex	-0.90	
2152	--	0.13	ex	1.65	
2156	EN14372 MOD	0.076		-3.65	
2159	in house	0.0749	ex	-3.76	
2165	in house	0.122	ex	0.87	
2166	in house	0.08		-3.26	
2169	in house	0.1202	ex,C	0.69	First reported 0.0234
2172	in house	0.0225	ex	-8.90	
2173	in house	0.09770	ex	-1.52	
2175	EPA3550C/8270D	0.10	ex	-1.29	
2179	in house	0.139	ex	2.54	
2182	EN14372	0.11		-0.31	
2184	in house	0.119	ex	0.57	
2187	ASTM D3421:75	0.12	ex	0.67	
2190	in house	0.13	ex	1.65	
2196	ASTM D3421	0.058	ex	-5.42	
2197	LFBG B80.32	0.092	ex	-2.08	
2201	EN14372:04	0.13		1.65	
2212	in house	----	ex	----	
2215	in house	0.024	ex	-8.75	
2216	in house	----	ex	----	
2222	in house	0.07	ex	-4.24	
2223	in house	----	ex	----	
2225	EN14372	0.138		2.44	
2226	EPA8270D / in house	0.07	ex	-4.24	
2229	in house	0.12	ex	0.67	
2233	in house	0.14	ex	2.63	
2234	EN14372:04	0.114		0.08	
2240	in house	0.072	ex	-4.04	
2242	In house	0.1367	ex	2.31	
2310	EN14372	0.11		-0.31	
2311	EN14372:04	0.13		1.65	
2350	EN14372	0.10		-1.29	
2359	EN14372:04	0.129		1.55	
2361	ASTM D3421:75	0.12	ex	0.67	
2363	EN14372:04	0.133		1.95	
2365	EN14372:04	0.629	G(0.01)	50.64	
2366	EN14372:04	0.134		2.04	
2369	EN14372:04	0.134		2.04	
2370	EN14372	0.128		1.46	
2371	EN14372:04	0.116		0.28	
2372	EN14372:04	0.115		0.18	
2375	EN14372:04	0.098		-1.49	
2379	EN14372	0.13		1.65	
2380	EN14372	0.12		0.67	
2385	in house	0.13	ex	1.65	
3100	EN14372	0.08		-3.26	
3101	EN14372:04	0.117		0.38	
3107	EN14372	0.13	C	1.65	First reported <0.01
3110	EN14372:04	0.124		1.06	
3116	in house	0.04	ex	-7.18	
3117	EN14372 MOD	0.06	ex	-5.22	
3134	in house	0.14	ex	2.63	
3150	in house	0.0012	ex	-10.99	False negative result?
3151	EN14372:04	0.046		-6.59	First reported 18.0
3153	in house	0.129	ex	1.55	
3154	in house	0.13	ex	1.65	
3159	in house	0.057	ex,C	-5.51	First reported 0.023
3161	in house	0.15	ex	3.62	
3166	EPA8270D	0.0090	ex	-10.23	

3167	EN14372:04	0.140		2.63
3169	EN14372	0.104		-0.90
3172	in house	0.10	ex	-1.29
3174	EN14372 MOD	0.194	ex	7.94
3175	in house	0.14	ex	2.63
3176	in house	0.047	ex	-6.50
3179	in house	0.126	ex	1.26
3182	EN14372	0.13		1.65
3185	EN14372:04	0.11		-0.31
3191	in house	0.133	ex	1.95
3192	--	----		----
3195	in house	0.092	ex,C	-2.08
3199	in house	0.078	ex	-3.45
3200	In house	0.01	ex	-10.13
3210	EN14372:04	0.06		-5.22
3216	EN14372:04	0.137		2.34
3218	EN14372:04	0.12		0.67
3220	In house	0.07	ex	-4.24
3222	prEN15777	0.126	ex	1.26
3225	in house	0.1108	ex	-0.23
3228	in house	0.155	ex	4.11
3233	in house	0.09	ex	-2.28
3237	in house	0.06	ex	-5.22
3238	in house	0.05	ex	-6.20
3243	In house	0.09	ex,C	-2.28
3246	in house	0.14	ex	2.63
3248	in house	0.048	ex	-6.40
4095	in house	0.029	ex	-8.26
8005	EN14372	0.04		-7.18
8006	in house	0.04	ex	-7.18

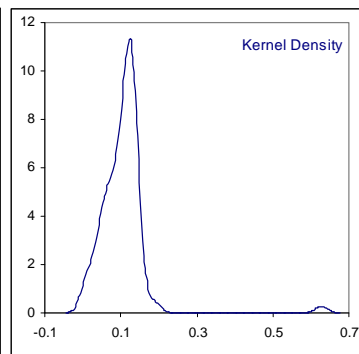
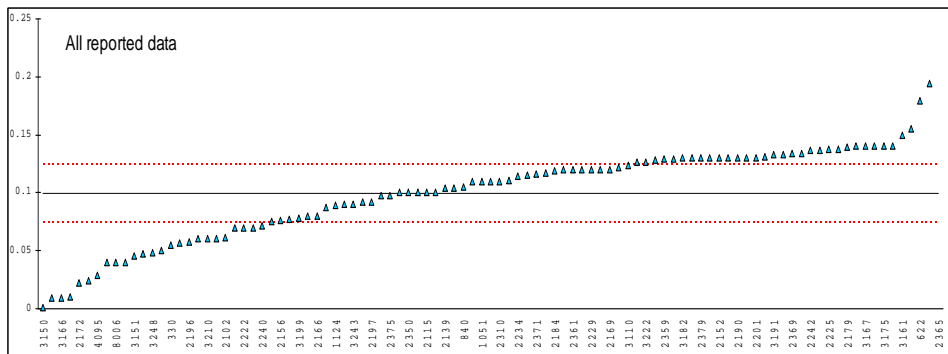
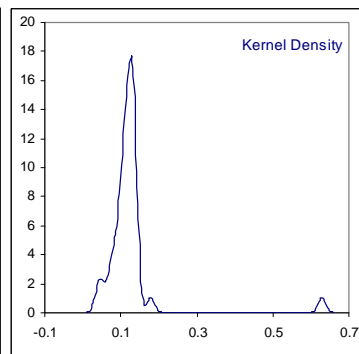
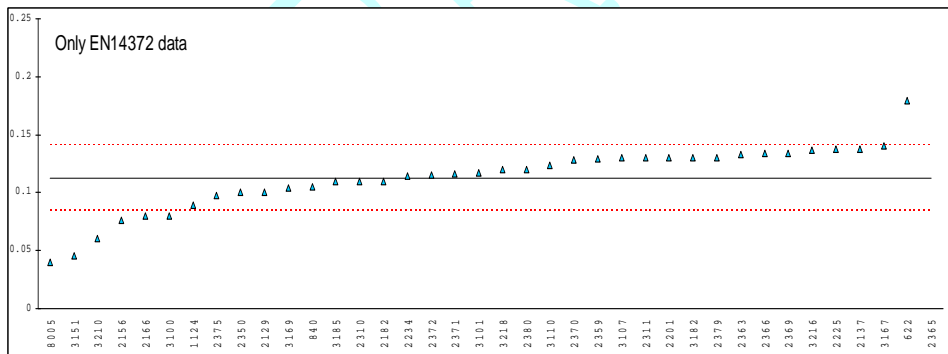
First reported 0.011

First reported 0.015

Compare all reported data:

normality	OK	not OK
n	36	98
outliers	1 (+ 62 ex)	1
mean (n)	0.113	0.100
st.dev. (n)	0.0281	0.0394
R(calc.)	0.079	0.110
R(EN14372:04)	0.029	0.025
R(Horwitz)	0.018	0.016

**ex:** For the determination of the assigned value (= mean(n)), only EN14372 data (using Soxhlet with Diethylether as extraction solvent) were used. Subsequently all test results were compared with this assigned value.

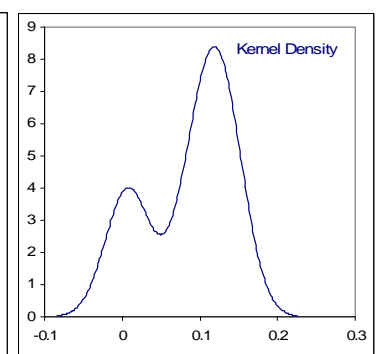
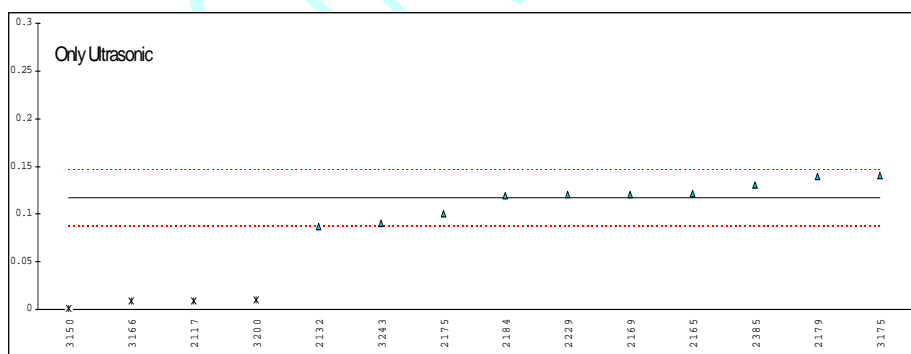
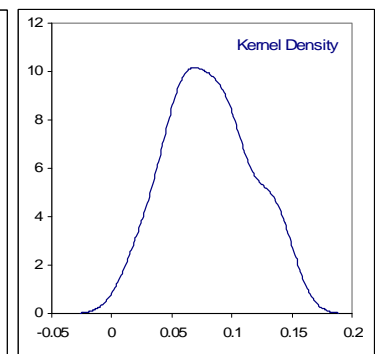
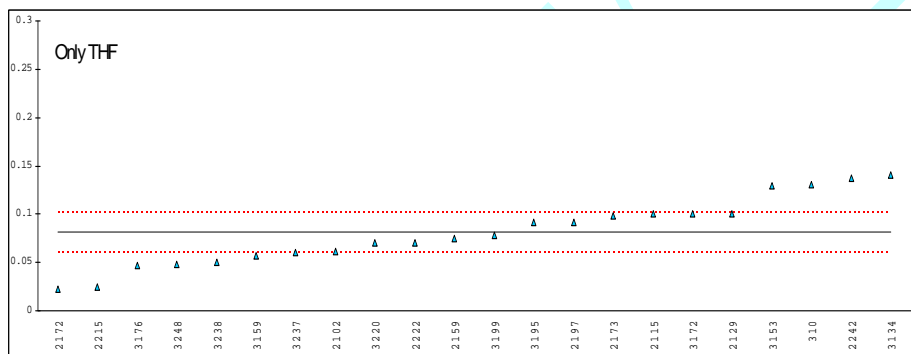
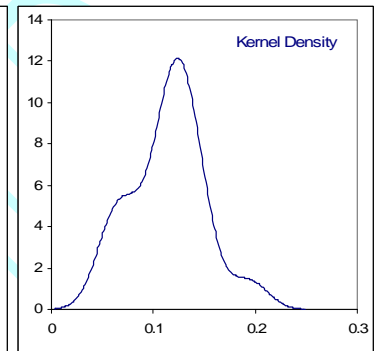
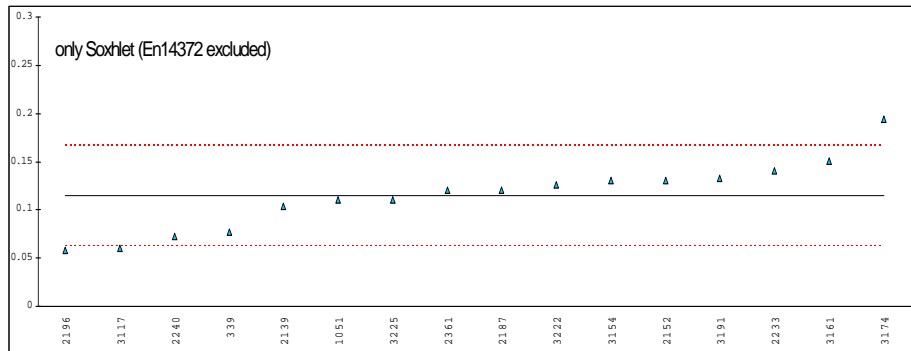


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CORRECTED

Determination of DEHP on sample #0914; results in %M/M (continued)

	Only Soxhlet: EN14372 excluded	Only THF:	Only Ultrasonic:
normality	OK	OK	OK
n	16	22	10
outliers	0	0	4
mean (n)	0.115	0.081	0.117
st.dev. (n)	0.0354	0.0342	0.0187
R(calc.)	0.099	0.096	0.052
R(EN14372:04)	0.052	0.020	0.029
R(Horwitz)	0.018	0.013	0.018



Determination of DINP, DIDP, DNOP and OP on sample #0914; results in %M/M

lab	method	DINP	remark	DIDP	remark	DNOP	remark	OP	remark
310	in house	<0.1		<0.1		<0.1		----	
330	in house	<0.02		<0.02		<0.02		----	
339	in house	<0.05		<0.05		<0.01		<0.01	
622	EN14372:04	nd		nd		nd		----	
840	EN14372:04	nd		nd		nd		----	
1051	ASTM D3421	<0.005		<0.005		<0.005		----	
1124	EN14372:04	0		0		0		----	
2102	in house	----		----		----		----	
2115	in house	nd		nd		nd		----	
2117	in house	----		----		----		----	
2129	in house	----		----		----		----	
2132	in house	<0.005		<0.005		<0.005		<0.005	
2137	EN147372:04	<0.01		<0.01		<0.01		<0.01	
2139	in house	nd		nd		nd		----	
2152	--	----		----		----		----	
2156	EN14372 MOD	nd	Fr. 0.010	nd	Fr. 0.010	nd	Fr. 0.010	0.085	
2159	in house	<0.005		<0.005		<0.005		----	
2165	in house	nd		nd		nd		----	
2166	in house	nd		nd		nd		0.09	
2169	in house	<0.01		<0.01		<0.01		----	
2172	in house	nd		nd		nd		nd	
2173	in house	----		----		----		----	
2175	EPA3550C/8270D	<0.0025		<0.0025		<0.0025		----	
2179	in house	nd		nd		nd		----	
2182	EN14372	<0.01		<0.01		<0.01		----	
2184	in house	nd		nd		nd		----	
2187	ASTM D3421:75	<0.01		<0.01		<0.01		----	
2190	in house	<0.01		<0.01		<0.01		----	
2196	ASTM D3421	<0.01		<0.01		<0.01		----	
2197	LFBG B80.32	nd		nd		nd		0.002	
2201	EN14372:04	<0.01		<0.01		<0.01		----	
2212	in house	----		----		----		----	
2215	in house	<0.005		<0.005		<0.005		<0.005	
2216	in house	----		----		----		----	
2222	in house	----		----		----		----	
2223	in house	----		----		----		----	
2225	EN14372	<0.01		<0.01		<0.01		----	
2226	EPA8270D	----		----		----		----	
2229	in house	<0.02		<0.02		<0.02		----	
2233	in house	0		0		0		----	
2234	EN14372:04	<0.01		<0.01		<0.005		----	
2240	in house	<0.010		<0.010		<0.005		----	
2242	In house	----		----		----		----	
2310	EN14372	<0.01		<0.01		<0.01		----	
2311	EN14372:04	<0.01		<0.01		<0.01		----	
2350	EN14372	nd		nd		nd		----	
2359	EN14372:04	<0.010		<0.010		<0.003		nd	
2361	ASTM D3421:75	<0.01		<0.01		<0.003		----	
2363	EN14372:04	nd		nd		nd		nil	
2365	EN14372:04	nd		nd		nd		nil	
2366	EN14372:04	nd		nd		nd		----	
2369	EN14372:04	<0.010		<0.010		<0.003		----	
2370	EN14372	nd		nd		nd		----	
2371	EN14372:04	nd		nd		nd		none	
2372	EN14372:04	nd		nd		nd		none	
2375	EN14372:04	nd		nd		nd		na	
2379	EN14372	nd		nd		nd		nd	
2380	EN14372	nd		nd		nd		----	
2385	in house	<0.02		<0.02		<0.01		----	
3100	EN14372	<0.01		<0.01		<0.01		----	
3101	EN14372:04	<0.01		<0.01		<0.01		<0.01	
3107	EN14372	<0.01	Fr. 0.22	<0.01		<0.01		0.01	
3110	EN14372:04	<0.01		<0.01		<0.01		----	
3116	in house	----		----		----		----	
3117	EN14372 MOD	----		----		----		----	
3134	in house	<0.0006		<0.0006		<0.00014		----	
3150	in house	----		----		----		----	
3151	EN14372:04	<0.005		<0.005		<0.005		<0.005	
3153	in house	<0.01		<0.01		<0.01		----	
3154	in house	----		----		----		----	
3159	in house	<0.005		<0.005		<0.005		<0.005	
3161	in house	----		----		----		----	
3166	EPA8270D	----		----		----		----	
3167	EN14372:04	<0.01		<0.01		<0.005		----	

3169	EN14372	<0.01	<0.01	<0.001	----
3172	in house	<0.01	<0.01	<0.01	----
3174	EN14372 MOD	0.019	0.001	0.004	----
3175	in house	<0.01	<0.01	<0.01	none
3176	in house	----	----	----	----
3179	in house	nd	nd	nd	----
3182	EN14372	<0.01	<0.01	<0.01	----
3185	EN14372:04	<0.01	<0.01	<0.01	----
3191	in house	<0.01	<0.01	<0.01	<0.01
3192	--	----	----	----	----
3195	in house	----	----	----	----
3199	in house	<0.005	<0.005	<0.005	----
3200	In house	nd	nd	nd	----
3210	EN14372:04	<0.05	<0.05	<0.05	----
3216	EN14372:04	nd	nd	nd	----
3218	EN14372:04	nd	nd	nd	----
3220	In house	nd	nd	nd	nd
3222	prEN15777	----	----	----	----
3225	in house	<0.005	<0.005	<0.005	----
3228	in house	nd	nd	nd	----
3233	in house	----	----	----	----
3237	in house	----	----	----	----
3238	in house	----	----	----	----
3243	In house	nd	nd	nd	0.006
3246	in house	nd	nd	nd	nd
3248	in house	<0.030	<0.030	<0.030	----
4095	in house	----	----	----	----
8005	EN14372	----	----	----	----
8006	in house	----	----	----	----
	normality	n.a.	n.a.	n.a.	n.a.
	n	3	3	3	5
	outliers	n.a.	n.a.	n.a.	n.a.
	mean (n)	n.a.	n.a.	n.a.	n.a.
	st.dev. (n)	n.a.	n.a.	n.a.	n.a.
	R(calc.)	n.a.	n.a.	n.a.	n.a.
	R(EN14372:04)	n.a.	n.a.	n.a.	n.a.

## APPENDIX 2

## Method information

lab	Method	Technique	Solvent	Temp & Time	Technique to detect and quantify	Corr. for recovery	remarks
310	in house	THF	--	PVC:2 hrs, PP=overnight in THF	HPLC with GCMS	no	--
330	in house	Reflux with solvents mix	CHCl <sub>3</sub> /MeOH (2:1)	10 hrs	GC/MS + SIM	no	--
339	in house	Soxhlet	DCM	8 hrs	GC/MS	no	--
622	EN14372:04	Soxhlet	Diethyl ether	6 hrs	GC/MS + ion fragment	no	--
840	EN14372:04	Soxhlet	Diethyl ether	6 hrs	--	no	--
1051	ASTM D3421	Soxhlet	CHCl <sub>3</sub> /MeOH (2:1)	16 hrs	GC/MS	no	--
1124	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
2102	in house	THF	THF	#0913: 30 min. at 20°C; #0914: 8 hrs at 20°C	GC/MS	no	--
2115	in house	THF	THF	#0913: 30 min at 20°C.; #0914: 60 min at 40°C	GC/MS	no	--
2117	in house	Ultrasonic	MTBE	40°C for 1 hrs	GC/MSD	--	--
2129	in house	THF	THF	20°C for 30 min	GC/MS	yes	--
2132	in house	Ultrasonic	CHCl <sub>3</sub>	20°C for 30 min.	GC/MSD	no	--
2137	EN147372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MSD, LC/MSD	no	--
2139	in house	Soxhlet	Hexane	9 hrs	GC/MS	no	--
2152	--	Soxhlet	CHCl <sub>3</sub> /MeOH	--	GC/MS	no	--
2156	EN14372 MOD	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
2159	in house	THF	THF / ACN	40°C for 1 hr	GC/MS	no	--
2165	in house	Ultrasonic	Hexane:Acetone:MTBE (1:1:1)	60°C for 6 hrs	GC/MS	no	--
2166	in house	Soxhlet	Diethyl Ether	8 hrs	GC/MS	no	--
2169	in house	Ultrasonic	Acetone:Hexane (3:7)	37°C for 30 min, single night leaving	GC/MS	no	--
2172	in house	THF	THF / ACN	40°C for 30 min	GC/MS	no	--
2173	in house	THF	THF / CHCl <sub>3</sub> /Hexane	-- for 2 hrs	GC/MS	no	--
2175	EPA3550C/8270 D	Ultrasonic	Acetone:Hexane (1:1)	70°C for 30 min	GC/MS	no	--
2179	in house	Ultrasonic	Toluene	120°C for 2 hrs	GC/MS	no	--
2182	EN14372	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
2184	in house	Ultrasonic	Organic Solvent	60°C for 3 hrs	GC/MS	no	--
2187	ASTM D3421:75	Soxhlet	CHCl <sub>3</sub> /MeOH (2:1)	16 hrs	GC/MS	no	--
2190	in house	ASE	Ethylacetate / Hexane / Acetone	--	GC/MS	no	--
2196	ASTM D3421	Soxhlet	CHCl <sub>3</sub> /MeOH (2:1)	16 hrs	GC/MS	no	--
2197	LFBG B80.32	THF	--	20°C for 16 hrs	GC/MS	no	--
2201	EN14372:04	Soxhlet	Diethyl Ether, n-Hexane	6 hrs	GC/MS	no	no
2212	in house	THF	THF / Hexane	20°C for 30 min	GC/MS	no	--
2215	in house	THF	THF / ACN	40°C for 30 min	GC/MS	no	--
2216	in house	THF	THF / Hexane	20°C for 2 hrs	SIM mode	no	--
2222	in house	THF	THF / Iso-Octane	37°C for 12 hrs	CPG/SM	no	--
2223	in house	Ultrasonic	Acetone	20°C for 18 hrs	GC/MS	no	--
2225	EN14372	Soxhlet	Diethyl Ether	6 hrs	GC/MS.	no	--
2226	EPA8270D / in house	Microwave	Acetone:DCM (1:1)	110°C for 30 min	GC/MS	no	--
2229	in house	Ultrasonic	Chloroform	50°C for 1 hr	GC/MS	no	--
2233	in house	Soxhlet	Diphenyl dichloromethane	3 hrs	GC/MS	no	samples were powdered
2234	EN14372:04	Soxhlet	Diether Ether	6 hrs	GC/MS	no	--
2240	in house	Soxhlet	DCM	3.5 hrs	GC/MS	no	--
2242	In house	THF	THF / Hexane	20°C for 30 min	GC/MS	no	--
2310	EN14372	Soxhlet	Diethyl Ether	40°C for 6	GC/MSD	no	--
2311	EN14372:04	Soxhlet	Diethyl Ether	40°C for 6	GC/MSD	no	--
2350	EN14372	Soxhlet	Diethyl Ether	6 hrs	GC/MSD	no	--
2359	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--



2361	ASTM D3421:75	Soxhlet	DCM / MeOH (1:1)	--	GC/MSD	no	--
2363	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
2365	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MSD	no	--
2366	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
2369	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
2370	EN14372	Soxhlet	Diethyl Ether	6 hrs	GC/MSD	no	--
2371	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	--	no	--
2372	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	--	no	--
2375	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	--	no	--
2379	EN14372	Soxhlet	Diethyl Ether	6 hrs	GC/MSD	no	--
2380	EN14372	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
2385	in house	Ultrasonic	Toluene	70°C for 1 hr	GC/MS	yes	--
3100	EN14372	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
3101	EN14372:04	Soxhlet	Diethyl Ether	6.5 hrs	GC/MSD	no	--
3107	EN14372	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
3110	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MSD	no	--
3116	in house	Solvent extrac.	DCM	20°C for 16 hrs	GC/MS	--	--
3117	EN14372 MOD	Soxhlet	n-Hexane	6 hrs	GC/MS	no	--
3134	in house	THF;	THF	40°C for 3 hrs	HPLC / GC/MS	no	--
3150	in house	Ultrasonic	Acetone	20°C for 30 min	GC/MS	no	--
3151	EN14372:04	Soxhlet	Diethyl ether	6 hrs	GC/MS LC/MS, LC/DAD	no	--
3153	in house	THF	THF / MeOH	20°C for 2 hrs.	GC/MS	no	--
3154	in house	Soxhlet	Hexane	2 hrs	GC/MS	no	--
3159	in house	THF	THF / ACN	40°C for 30 min	GC/MS	no	--
3161	in house	Soxhlet	Hexane:Acetone (1:1)	18 hrs	GC/MS, GC/FID	no	--
3166	EPA8270D	Ultrasonic	DCM	20°C for 1 hr.	GC/MS	no	--
3167	EN14372:04	Soxhlet	Diethyl ether	6 hrs	GC/MS/ GC/FID	no	--
3169	EN14372	Soxhlet	Diethyl ether	6 hrs	GC/MSD	no	--
3172	in house	THF	THF	40°C for 1 hr	LC/MS	no	--
3174	EN14372 MOD	Soxhlet	DCM	6 hrs	GC/MS	yes	--
3175	in house	Ultrasonic	Cyclohexane	20°C for 1 hr	GC/MS	no	--
3176	in house	THF	THF / ACN	--	HPLC/DAD	--	--
3179	in house	Heater	MTBE	60°C for 12 hrs	GC/MS	no	--
3182	EN14372	Soxhlet	Diethyl ether	6 hrs	GC/MS	yes	--
3185	EN14372:04	Soxhlet	Diethyl Ether	6 hrs	GC/MS	no	--
3191	in house	Soxhlet	DCM	3 hrs	GC/MS	no	--
3192	--	--	--	--	--	--	--
3195	in house	THF	THF	--	GC/MS	no	--
3199	in house	THF	THF	40°C for 30 / 60 min	HPLC/DAD, GC/MS	no	--
3200	In house	Ultrasonic	DCM	20°C for 1.5 hrs	GC/MS	no	--
3210	EN14372:04	Soxhlet	Diethyl ether	--	GC/MS	no	--
3216	EN14372:04	Soxhlet	Diethyl ether	6 hrs	GC/MS	--	--
3218	EN14372:04	Soxhlet	Diethyl ether	6 hrs	GC/MS	no	--
3220	In house	THF	THF / Hexane	60°C for 2 hrs	GC/MS	no	--
3222	prEN15777	Soxhlet	Hexane	4 hrs	GC/MS	no	--
3225	in house	Soxhlet	CHCl3	6 hrs	GC/MS	no	--
3228	in house	Extraction	MTBE	12 hrs	GC/MS	no	--
3233	in house	Extraction	DCM	20°C for 20 hrs	GC/MS	no	--
3237	in house	THF	THF	40°C for 30 min	HPLC/DAD	no	--
3238	in house	THF	THF / MeOH	40°C for 2 hrs	GC/MS	yes	--
3243	In house	Ultrasonic	DCM	20°C for 30 min	GC/MS	no	--
3246	in house	Extraction	MTBE	60°C for 12 hrs	GC/MS	no	--
3248	in house	THF	THF	20°C for 30 min	GC/MS	no	--
4095	in house	Extraction	DCM/MeOH (1:1)	20°C for 3 days	GC/MSD	no	--
8005	EN14372	Soxhlet	Diethyl ether	6 hrs	GC/MS	--	--
8006	in house	Extraction	Hexane/Acetone	37°C at 16 hrs	GC	--	--

**APPENDIX 3****Number of participating laboratories per country**

1 laboratory in AUSTRIA  
1 laboratory in BANGLADESH  
7 laboratories in FRANCE  
12 laboratories in GERMANY  
1 laboratory in GREECE  
17 laboratories in HONG KONG  
1 laboratory in HUNGARY  
3 laboratories in INDIA  
1 laboratory in INDONESIA  
3 laboratories in ITALY  
1 laboratory in JAPAN  
3 laboratories in KOREA  
1 laboratory in LATVIA  
1 laboratory in MALAYSIA  
1 laboratory in MEXICO  
25 laboratories in P.R. of CHINA  
1 laboratory in SINGAPORE  
1 laboratory in SLOVENIA  
1 laboratory in SPAIN  
1 laboratory in SWITZERLAND  
3 laboratories in TAIWAN R.O.C.  
4 laboratories in THAILAND  
2 laboratories in THE NETHERLANDS  
4 laboratories in TURKEY  
4 laboratories in U.S.A.  
1 laboratory in UNITED KINGDOM  
2 laboratories 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
n.a.	= not applicable
nd	= not detected

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