Institute for
Interlaboratory Studies

Results of Proficiency Test
Colorants (Banned Dyes) in Textile
May 2022

Organized by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

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1 INTRODUCTION

Colored fabrics, when in contact with human skin, may cause Allergic Contact Dermatitis. Several dyestuffs are therefore classified as allergenic. Textiles are not allowed to contain more than 20 mg/kg of the dyes listed in the latest OEKOTEX® Standard 100 edition 01/2022 and Bluesign® 12/2020. The OEKOTEX® Standard 100 also lists many carcinogenic dyes and other banned dyestuffs.
The ban on dyes has become a widely publicized issue in the textile industry. Dyestuff manufacturers, processors and exporters are careful in the selection of the dyes. However, several dyestuffs that are skin sensitizers may still be in use for dyeing polyester and nylon.

Since 2005 the Institute for Interlaboratory Studies (iis) organizes a proficiency scheme for the determination of Colorants (Disperse Dyes only) in Textile every year. In 2016 the scope was extended with carcinogenic and other banned dyes. During the annual proficiency testing program 2021/2022 it was decided to continue the proficiency test for the determination of Colorants (Banned Dyes) in Textile.

In this interlaboratory study 80 laboratories in 26 countries registered for participation, see appendix 4 for the number of participants per country. In this report the results of the Colorants (Banned Dyes) in Textile 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 organizer of this proficiency test (PT). Sample analyzes for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC17025 accredited laboratory.
It was decided to send 2 different textile samples of approximately 3 grams each. A grey woven fabric labelled #22600 and a pink cotton labelled #22601 which were both artificially fortified with different banned colorants.
The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 ACCREDITATION

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

2.2 PROTOCOL

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol is electronically available through the iis website www.iisnl.com, from the FAQ page.

2.3 CONFIDENTIALITY STATEMENT

All data presented in this report must be regarded as confidential and for use by the participating companies only. Disclosure of the information in this report is only allowed by means of the entire report. Use of the contents of this report for third parties is only allowed by written permission of the Institute for Interlaboratory Studies. Disclosure of the identity of one or more of the participating companies will be done only after receipt of a written agreement of the companies involved.

2.4 SAMPLES

For the first sample a batch of grey woven fabric was selected which was dyed with allergenic colorants Disperse Blue 3 and Disperse Orange 1 by a third party. This batch was cut into small pieces. After homogenization 120 small plastic bags were filled with approximately 3 grams each and labelled #22600.
The batch was used in a previous proficiency test on Colorants (Banned Dyes) as sample #13024 in PT iis13A02. Therefore, homogeneity of the subsamples was assumed.

For the second sample a batch of pink cotton was selected which was dyed with a carcinogenic colorant Basic Red 93 by a third party. This batch was cut into small pieces. After homogenization 120 small plastic bags were filled with approximately 3 grams each and labelled #22601.
The homogeneity of the subsamples was checked by determination of Basic Red 9 according to method GB-T-20382-2006 on 8 stratified randomly selected subsamples.

	Basic Red 9 in mg/kg
sample #22601-1	118.5
sample #22601-2	117.4
sample #22601-3	120.9
sample #22601-4	117.9
sample #22601-5	118.0
sample #22601-6	121.2
sample #22601-7	117.9
sample #22601-8	115.6

Table 1: homogeneity test results of subsamples #22601

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

	Basic Red 9 in mg/kg
r (observed)	5.1
reference test method	DIN54231:05
0.3 x R (reference test method)	28.5

Table 2: evaluation of the repeatability of subsamples #22601

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

To each of the participating laboratories one textile sample labelled #22600 and one textile sample labelled #22601 was sent on April 6, 2022.

2.5 ANALYZES

The participants were requested to determine the concentrations of 22 banned allergenic dyes, 9 banned carcinogenic dyes and 6 other banned dyes applying the analysis procedure that is routinely used in the laboratory. See the list of colorants in appendix 2.
It was noted in the instructions of this PT to not use less than 0.5 grams per determination to ensure the homogeneity. It was requested to report if the laboratory was accredited for the determined components and to report some analytical details.

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

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

3 RESULTS

During five weeks after sample dispatch, the test results of the individual laboratories were gathered via the data entry portal www.kpmd.co.uk/sgs-iis-cts/. The reported test results are tabulated per determination in appendices 1 and 2 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalyzes). Additional or

corrected test results are used for data analysis and the original test results are placed under 'Remarks' in the result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

3.1 STATISTICS

The protocol followed in the organization of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5).
For the statistical evaluation, the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<…' or '>…' were not used in the statistical evaluation.

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

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

According to ISO13528 all (original received or corrected) results per determination were submitted to outlier tests. In the iis procedure for proficiency tests, outliers are detected prior to calculation of the mean, standard deviation and reproducibility. For small data sets, Dixon (up to 20 test results) or Grubbs (up to 40 test results) outlier tests can be used. For larger data sets (above 20 test results) Rosner's outlier test can be used. Outliers are marked by D(0.01) for the Dixon's test, by G(0.01) or DG(0.01) for the Grubbs' test and by R(0.01) for the Rosner's test. Stragglers are marked by D(0.05) for the Dixon's test, by G(0.05) or DG(0.05) for the Grubbs' test and by R(0.05) for the Rosner's test. Both outliers and stragglers were not included in the calculations of averages and standard deviations.

For each assigned value, the uncertainty was determined in accordance with ISO13528. Subsequently the calculated uncertainty was evaluated against the respective requirement based on the target reproducibility in accordance with ISO13528. In this PT, the criterion of ISO13528, paragraph 9.2.1 was met for all evaluated tests, therefore, the uncertainty of all assigned values may be negligible and need not be included in the PT report.

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

3.2 GRAPHICS

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

Furthermore, Kernel Density Graphs were made. This is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also, a normal Gauss curve (dotted line) was projected over the Kernel Density Graph (smooth line) for reference. The Gauss curve is calculated from the consensus value and the corresponding standard deviation.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements derived from e.g. ISO or ASTM test methods), the z-scores were calculated using a target standard deviation. This results in an evaluation independent of the variation 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, like Horwitz or an estimated reproducibility based on former iis proficiency tests.

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

The z-scores were calculated according to:

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

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

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

	$\lvert z \rvert$	< 1	good
1 <	$\lvert z \rvert$	< 2	satisfactory
2 <	$\lvert z \rvert$	< 3	questionable
3 <	$\lvert z \rvert$		unsatisfactory

4 EVALUATION

Some problems were encountered with the dispatch of the samples due to COVID-19 pandemic. Therefore, the reporting time on the data entry portal was extended with another week. Nine participants reported test results after the extended reporting date and six other participants did not report any test results. Not all participants were able to report all tests requested.
In total 74 participants reported 215 numerical test results. Observed were 3 outlying test results, which is 1.4 %. In proficiency tests outlier percentages of 3 % - 7.5 % are quite normal.

Not all data sets proved to have a normal Gaussian distribution. These are referred 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 COMPONENT

In this section the reported test results are discussed per sample and per component. The test methods which were used by the various laboratories were taken into account for explaining the observed differences when possible and applicable. These test methods are also in the tables together with the original data in appendix 1. The abbreviations, used in these tables, are explained in appendix 5.

In DIN54231 no reproducibility is mentioned. Only the standard deviation for the repeatability is mentioned. Therefore, the target reproducibility was estimated as follows: the repeatability standard deviation was multiplied with 2.8 to get the target repeatability. And this was multiplied with 3 to get an estimate of the target reproducibility.

sample #22600

Disperse Blue 3 (CAS No. 2475-46-9): The determination was very problematic. No statistical outliers were observed. The calculated reproducibility is not at all in agreement with the estimated reproducibility derived from test method DIN54231:05.

Disperse Orange 1 (CAS No. 2581-69-3): The determination was not problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is in full agreement with the estimated reproducibility derived from test method DIN54231:05.

The majority of the participants agreed on a concentration near or below the limit of detection for all other colorants mentioned in appendix 2. Therefore, no z-scores were calculated for these components. The test results of these components are mentioned in appendix 2.

sample #22601

Basic Red 9 (CAS No. 569-61-9): The determination was not problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is in good agreement with the estimated reproducibility derived from test method DIN54231:05.

All the participants agreed on a concentration near or below the limit of detection for all other colorants mentioned in appendix 2. Therefore, no z-scores were calculated for these components. The test results of these components are given in appendix 2.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

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

Component	unit	n	average	2.8 * sd	R(lit)
Disperse Blue 3	mg/kg	72	271	522	218
Disperse Orange 1	mg/kg	71	80.0	66.0	64.1

Table 3: reproducibilities of the colorants in textile sample #22600

Component	unit	n	average	2.8 * sd	R(lit)
Basic Red 9	mg/kg	69	112	55	90

Table 4: reproducibility of the colorants in textile sample #22601

Without further statistical calculations, it can be concluded that for two of the three components that there is a good compliance of the group of participants with the reference test method. The problematic component has been discussed in paragraph 4.1 and 5.

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

	May 2022	March 2021	March 2020	March 2019	March 2018
Number of reporting laboratories	74	82	66	78	88
Number of test results	215	236	202	297	657
Number of statistical outliers	3	9	16	10	21
Percentage of statistical outliers	1.4%	3.8%	7.9%	3.4%	3.2%

Table 5: Comparison with previous proficiency tests

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

The performance of the determinations of the proficiency test was compared, expressed as relative standard deviation (RSD) of the PTs, see next table.

	May 2022	March 2021	March 2020	March 2019	2006 – 2018	target DIN54321
Disperse Blue 1	n.e.	n.e.	n.e.	n.e.	43%	27%
Disperse Blue 3	69%	n.e.	n.e.	n.e.	36 – 56%	27%
Disperse Blue 26	n.e.	n.e.	n.e.	n.e.	47 – 68%	27%

	May 2022	March 2021	March 2020	March 2019	2006 – 2018	target DIN54321
Disperse Blue 35	n.e.	n.e.	n.e.	n.e.	31 – 84%	27%
Disperse Blue 102	n.e.	n.e.	24%	n.e.	n.e.	27%
Disperse Blue 106	n.e.	n.e.	n.e.	n.e.	28 – 50%	27%
Disperse Brown 1	n.e.	n.e.	n.e.	n.e	33 – 39%	27%
Disperse Orange 1	29%	n.e.	n.e.	n.e.	35 – 47%	27%
Disperse Orange 3	n.e.	n.e.	n.e.	n.e.	24 – 54%	27%
Disperse Orange 76/37	n.e.	n.e.	33%	n.e.	33%	27%
Disperse Orange 149	n.e.	n.e.	n.e.	21%	27%	27%
Disperse Red 1	n.e.	n.e.	n.e.	33%	36 – 63%	27%
Disperse Red 11	n.e.	n.e.	n.e.	n.e.	41 – 65%	27%
Disperse Red 17	n.e.	30%	n.e.	n.e.	28 – 33%	27%
Disperse Yellow 1	n.e.	21%	n.e.	n.e.	24%	27%
Disperse Yellow 3	n.e.	n.e.	n.e.	34%	21 – 30%	27%
Disperse Yellow 9	n.e.	n.e.	n.e.	n.e.	21 – 31%	27%
Disperse Yellow 23	n.e.	n.e.	n.e.	13%	17%	27%
Disperse Yellow 49	n.e.	n.e.	n.e.	n.e.	54%	27%
Basic Red 9	18%	n.e.	33%	n.e.	n.e.	27%
Basic Violet 3	n.e.	31%	n.e.	n.e.	n.e.	27%
Basic Violet 14	n.e.	n.e.	29%	n.e.	n.e.	27%
Direct Black 38	n.e.	n.e.	n.e.	n.e.	32%	27%

Table 6: development of uncertainties over the last years

In comparison with previous PTs it is observed that the performance of the group improved for Disperse Orange 1 and Basic Red 9. Disperse Blue 3 was again very problematic.

4.4 EVALUATION OF THE ANALYTICAL DETAILS

The test method DIN54231 is used by almost all reporting participants.
For this PT some analytical details were requested which are given in appendix 3. Based on the answers given by the participants the following can be summarized:
- about 85% of the reporting participants mentioned that they are accredited for the determination of banned dyes in textile.
- About 55% of the reporting laboratories further cut the sample while the other 45% used the sample as received.
- About 65% used 0.5 grams or less and about 30 % used 1 gram as sample intake.

For Disperse Orange 1 and Basic Red 9 the calculated reproducibility is in agreement with the requirements of the target reproducibility, therefor no separate statistical analysis has been performed.

5 DISCUSSION

Almost all reporting participants were able to detect Disperse Blue 3 and Disperse Orange 1 in sample #22600 and Basic Red 9 in sample #22601. No other banned colorants were detected.
When the results of this interlaboratory study were compared to the Ecolabelling Standards and Requirements for Textiles in EU OEKO-TEX® 100 and with bluesign® RSL, it was noticed that not all participants would make identical decisions about the acceptability of the textiles for the determined components.

Ecolabel	baby clothes	in direct skin contact	no direct skin contact
bluesign® BSSL	<20 mg/kg	<20 mg/kg	<20 mg/kg
OEKO-TEX® 100	<20 mg/kg	<20 mg/kg	<20 mg/kg

Table 7: bluesign® BSSL and Ecolabelling Standards and Requirements for Textiles in EU

For sample #22600 almost all reporting laboratories would have rejected the sample for containing too much Disperse Blue 3 and too much Disperse Orange 1 for all categories. Only one participant would accept the sample.

For sample #22601 all reporting laboratories would have rejected the sample for containing too much Basic Red 9 for all categories.

6 CONCLUSION

The variation in this interlaboratory study is clearly not caused by just one critical point in the analysis. Almost all participants reported to have used DIN 54231. However, the detection technique and the purity of the various calibration standards that are used may vary strongly.

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

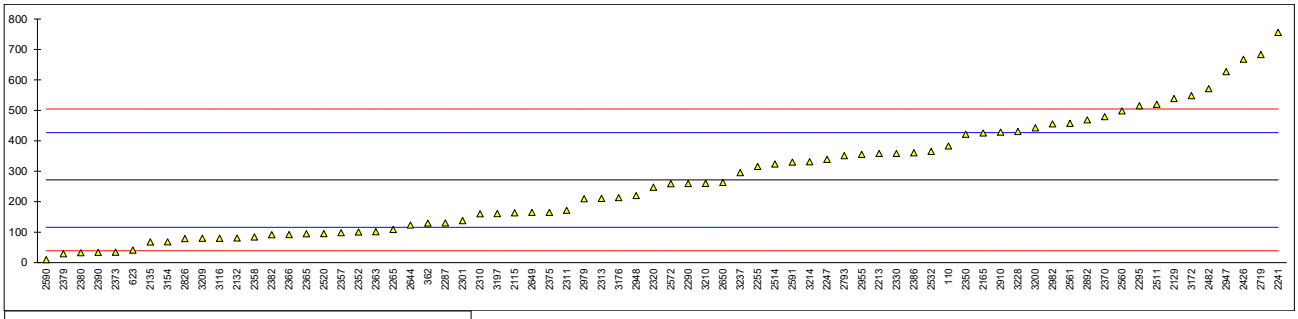
APPENDIX 1

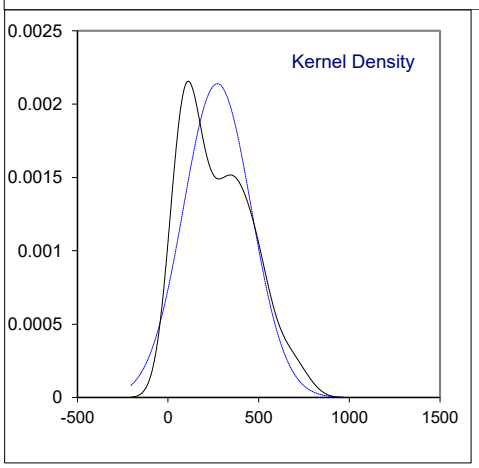
Determination of Disperse Blue 3 (CAS No. 2475-46-9) in sample #22600; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	DIN54231	383.08		1.44	
362	DIN54231	129.5		-1.83	
623	DIN54231	41.11		-2.96	
2115	DIN54231	163.58		-1.39	
2129	DIN54231	538.5		3.44	
2132	DIN54231	80.5		-2.46	
2135	DIN54231	67.7		-2.62	
2165	DIN54231	425.3		1.98	
2213	DIN54231	358.16		1.12	
2241	DIN54231	755.736		6.23	
2247	DIN54231	338.79		0.87	
2255	DIN54231	315.9		0.57	
2265	DIN54231	108.6		-2.10	
2287	DIN54231	130.05		-1.82	
2290	DIN54231	259.8		-0.15	
2293		-----		-----	
2295	DIN54231	515		3.13	
2301	DIN54231	137.82		-1.72	
2310	DIN54231	160		-1.43	
2311	DIN54231	171.37		-1.29	
2313	DIN54231	210.6		-0.78	
2320	DIN54231	247.44		-0.31	
2330	DIN54231	358.35		1.12	
2350	DIN54231	421.46		1.93	
2352	DIN54231	100.3		-2.20	
2357	DIN54231	98.0		-2.23	
2358	DIN54231	84.25		-2.41	
2363	DIN54231	101.5		-2.19	
2365	DIN54231	94.47		-2.28	
2366	DIN54231	91.8		-2.31	
2370	DIN54231	479		2.67	
2373	DIN54231	34.12		-3.05	
2375	DIN54231	165		-1.37	
2378		-----		-----	
2379	DIN54231	28.74		-3.12	
2380	DIN54231	32.4		-3.08	
2382	DIN54231	91.3		-2.32	
2386	DIN54231	360.69		1.15	
2390	DIN54231	33.17		-3.07	
2426	DIN54231	667.735		5.10	
2482	DIN54231	571		3.85	
2511	DIN54231	520		3.20	
2514	DIN54231	323.88		0.67	
2520	DIN54231	95		-2.27	
2532	DIN54231	365.06		1.20	
2538	DIN54231	detected		-----	
2560	DIN54231	497.82		2.91	
2561	DIN54231	457.3		2.39	
2572	DIN54231	259.2		-0.16	
2590	DIN54231	9.689		-3.37	
2591	DIN54231	329.93		0.75	
2644	DIN54231	123.18		-1.91	
2649	DIN54231	164.7		-1.37	
2650	DIN54231	262.87		-0.11	
2678		-----		-----	
2719		683		5.30	
2741		-----		-----	
2793	DIN54231	350.8597		1.02	
2826	DIN54231	78.99		-2.48	
2892		468.500		2.54	
2910	DIN54231	428.2		2.02	
2947	In house	627.3		4.58	
2948	DIN54231	220.155		-0.66	
2955	DIN54231	355.2		1.08	
2979	DIN54231	210		-0.79	
2982	DIN54231	455.42		2.37	
3005		-----		-----	
3116	DIN54231	79.68		-2.47	
3118		-----		-----	
3154	DIN54231	68.2		-2.62	
3172	DIN54231	548.54		3.57	
3176	ISO16373-2	213.08		-0.75	
3197	DIN54231	161.0		-1.42	
3200	DIN54231	442.3		2.20	
3209	DIN54231	79.52		-2.47	

lab	method	value	mark	z(targ)	remarks
3210	DIN54231	260		-0.15	
3214	DIN54231	331.34		0.77	
3228	DIN54231	430.2		2.04	
3230		-----		-----	
3237	DIN54231	295.41		0.31	

normality	OK	
n	72	
outliers	0	
mean (n)	271.491	
st.dev. (n)	186.4733	RSD = 69%
R(calc.)	522.125	
st.dev.(DIN54231:05)	77.7007	
R(DIN54231:05)	217.562	



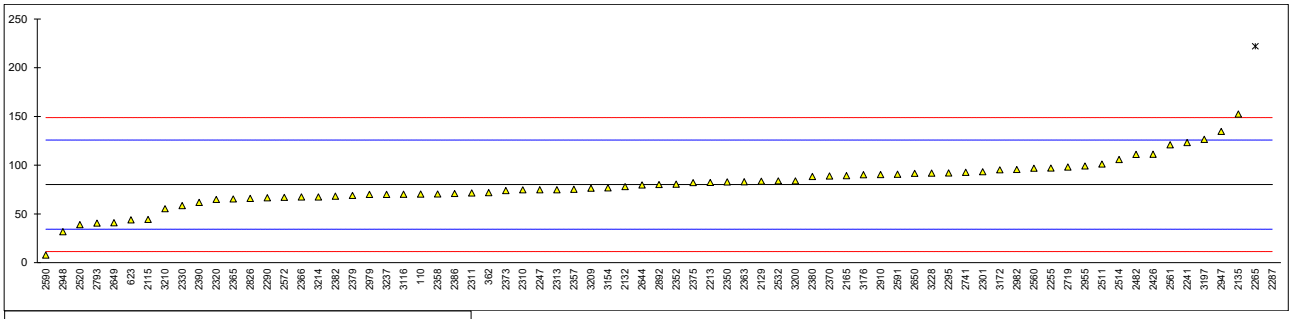


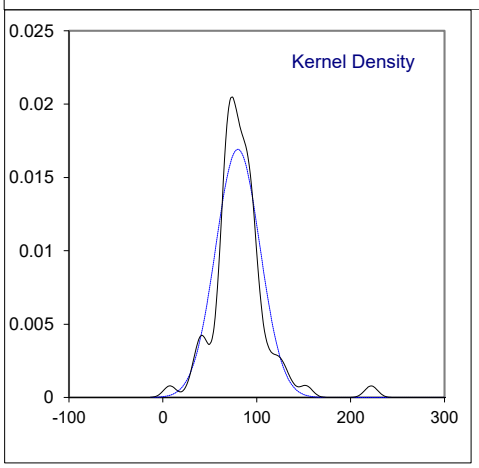
Determination of Disperse Orange 1 (CAS No. 2581-69-3) in sample #22600; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	DIN54231	70.32		-0.42	
362	DIN54231	71.8		-0.36	
623	DIN54231	43.74		-1.58	
2115	DIN54231	44.26		-1.56	
2129	DIN54231	83.6		0.16	
2132	DIN54231	78.0		-0.09	
2135	DIN54231	152.5		3.16	
2165	DIN54231	89.2		0.40	
2213	DIN54231	82.22		0.10	
2241	DIN54231	123.187		1.88	
2247	DIN54231	74.79		-0.23	
2255	DIN54231	97.0		0.74	
2265	DIN54231	222.0	C,R(0.01)	6.20	First reported 145.6
2287	DIN54231	605.39	R(0.01)	22.93	
2290	DIN54231	66.4		-0.60	
2293		-----		-----	
2295	DIN54231	92		0.52	
2301	DIN54231	93.28		0.58	
2310	DIN54231	74.7		-0.23	
2311	DIN54231	71.466		-0.37	
2313	DIN54231	74.82		-0.23	
2320	DIN54231	64.88		-0.66	
2330	DIN54231	58.41		-0.94	
2350	DIN54231	82.82		0.12	
2352	DIN54231	80.5		0.02	
2357	DIN54231	75.2		-0.21	
2358	DIN54231	70.42		-0.42	
2363	DIN54231	83		0.13	
2365	DIN54231	65.3		-0.64	
2366	DIN54231	67.4		-0.55	
2370	DIN54231	88.9		0.39	
2373	DIN54231	73.94		-0.27	
2375	DIN54231	82		0.09	
2378		-----		-----	
2379	DIN54231	68.95		-0.48	
2380	DIN54231	88.4		0.37	
2382	DIN54231	68.1		-0.52	
2386	DIN54231	70.79		-0.40	
2390	DIN54231	61.72	C	-0.80	First reported Not detected
2426	DIN54231	111.275		1.36	
2482	DIN54231	111		1.35	
2511	DIN54231	101		0.92	
2514	DIN54231	105.81		1.13	
2520	DIN54231	39		-1.79	
2532	DIN54231	83.82		0.17	
2538	DIN54231	detected		-----	
2560	DIN54231	96.83		0.73	
2561	DIN54231	120.8		1.78	
2572	DIN54231	66.9		-0.57	
2590	DIN54231	7.691		-3.16	
2591	DIN54231	90.68		0.46	
2644	DIN54231	79.63		-0.02	
2649	DIN54231	40.89		-1.71	
2650	DIN54231	91.59		0.50	
2678		-----		-----	
2719		98		0.78	
2741	DIN54231	92.54		0.55	
2793	DIN54231	40.4838		-1.73	
2826	DIN54231	65.82		-0.62	
2892		80.000		0.00	
2910	DIN54231	90.4		0.45	
2947	In house	134.6		2.38	
2948	DIN54231	31.696		-2.11	
2955	DIN54231	99.1		0.83	
2979	DIN54231	70		-0.44	
2982	DIN54231	95.48		0.67	
3005		-----		-----	
3116	DIN54231	70.06		-0.44	
3118		-----		-----	
3154	DIN54231	76.8		-0.14	
3172	DIN54231	95.219		0.66	
3176	ISO16373-2	90.24		0.45	
3197	DIN54231	126.5		2.03	
3200	DIN54231	83.9		0.17	
3209	DIN54231	76.32		-0.16	

lab	method	value	mark	z(targ)	remarks
3210	DIN54231	55.27		-1.08	
3214	DIN54231	67.45		-0.55	
3228	DIN54231	91.8		0.51	
3230		-----		-----	
3237	DIN54231	70.0		-0.44	

normality	suspect	
n	71	
outliers	2	
mean (n)	80.037	
st.dev. (n)	23.5702	RSD = 29%
R(calc.)	65.996	
st.dev.(DIN54231:05)	22.9065	
R(DIN54231:05)	64.138	

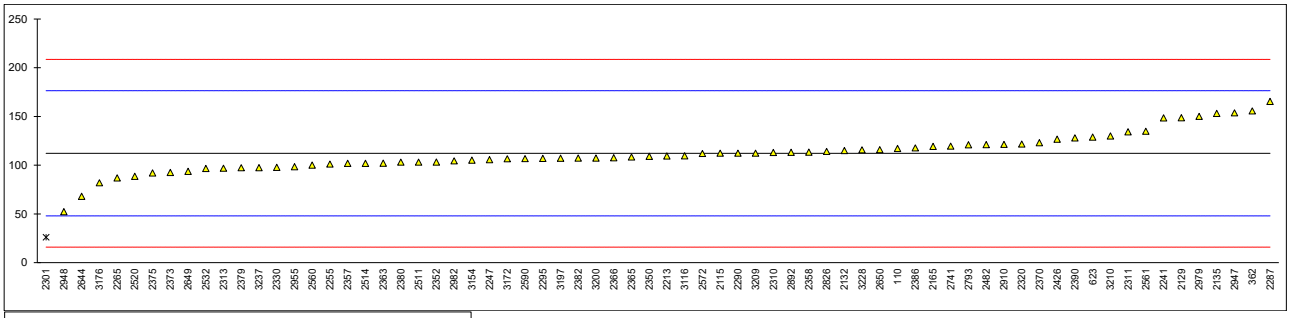


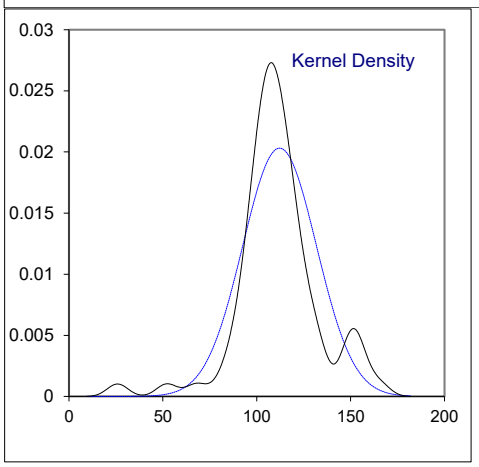


Determination of Basic Red 9 (CAS No. 569-61-9) in sample #22601; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	DIN54231	117.02	C	0.15	First reported 171.02
362	DIN54231	155.6		1.35	
623	DIN54231	128.76		0.51	
2115	DIN54231	112.27		0.00	
2129	DIN54231	148.7		1.14	
2132	DIN54231	115		0.09	
2135	DIN54231	153.1		1.27	
2165	DIN54231	119.2		0.22	
2213	DIN54231	109.34		-0.09	
2241	DIN54231	148.515		1.13	
2247	DIN54231	105.62		-0.21	
2255	DIN54231	101.0		-0.35	
2265	DIN54231	86.9		-0.79	
2287	DIN54231	165.47		1.66	
2290	DIN54231	112.3		0.00	
2293		-----		-----	
2295	DIN54231	107		-0.16	
2301	DIN54231	25.92	R(0.01)	-2.69	
2310	DIN54231	113		0.02	
2311	DIN54231	134.161		0.68	
2313	DIN54231	96.80		-0.48	
2320	DIN54231	121.59		0.29	
2330	DIN54231	97.73		-0.45	
2350	DIN54231	109.10		-0.10	
2352	DIN54231	103.2		-0.28	
2357	DIN54231	101.8		-0.32	
2358	DIN54231	113.26		0.03	
2363	DIN54231	102		-0.32	
2365	DIN54231	108.3		-0.12	
2366	DIN54231	107.6		-0.14	
2370	DIN54231	123		0.34	
2373	DIN54231	92.43		-0.62	
2375	DIN54231	92		-0.63	
2378		-----		-----	
2379	DIN54231	97.29		-0.47	
2380	DIN54231	103.0		-0.29	
2382	DIN54231	107.2		-0.16	
2386	DIN54231	117.69		0.17	
2390	DIN54231	128.01		0.49	
2426	DIN54231	126.63		0.45	
2482	DIN54231	121		0.27	
2511	DIN54231	103		-0.29	
2514	DIN54231	101.81		-0.32	
2520	DIN54231	88.5		-0.74	
2532	DIN54231	96.55		-0.49	
2538	DIN54231	detected		-----	
2560	DIN54231	100.07		-0.38	
2561	DIN54231	134.7		0.70	
2572	DIN54231	111.9		-0.01	
2590	DIN54231	106.710		-0.17	
2591		-----		-----	
2644	DIN54231	68.05		-1.38	
2649	DIN54231	93.63		-0.58	
2650	DIN54231	115.86		0.11	
2678		-----		-----	
2719		-----		-----	
2741	DIN54231	119.49		0.23	
2793	DIN54231	120.942	C	0.27	First reported 190.5
2826	DIN54231	114.1		0.06	
2892		113.100		0.03	
2910	DIN54231	121.4		0.29	
2947	In house	153.7		1.29	
2948	DIN54231	52.2		-1.87	
2955	DIN54231	98.3		-0.43	
2979	DIN54231	150		1.18	
2982	DIN54231	104.34		-0.25	
3005		-----		-----	
3116	DIN54231	109.6		-0.08	
3118		-----		-----	
3154	DIN54231	105.1		-0.22	
3172	DIN54231	106.51		-0.18	
3176	ISO16373-2	81.91		-0.94	
3197	DIN54231	107.1		-0.16	
3200	DIN54231	107.2		-0.16	
3209	DIN54231	112.32		0.00	

lab	method	value	mark	z(targ)	remarks
3210	DIN54231	130		0.55	
3214		-----		-----	
3228	DIN54231	115.8		0.11	
3230		-----		-----	
3237	DIN54231	97.49		-0.46	
	normality	suspect			
	n	69			
	outliers	1			
	mean (n)	112.231			
	st.dev. (n)	19.6416	RSD = 18%		
	R(calc.)	54.996			
	st.dev.(DIN54231:05)	32.1206			
	R(DIN54231:05)	89.938			





APPENDIX 2 Other reported banned colorants

Abbreviations and details of allergenic colorants, see also OEKO-TEX® 100:

DB1	: Disperse Blue 1	CASno 2475-45-8	C.I.no 64 500
DB3	: Disperse Blue 3	CASno 2475-46-9	C.I.no 61 505
DB7	: Disperse Blue 7	CASno 3179-90-6	C.I.no 62 500
DB26	: Disperse Blue 26	CASno 3860-63-7	C.I.no 63 305
DB35	: Disperse Blue 35*	CASno 12222-75-2 (*)	
DB35a	: Disperse Blue 35a	CASno 56524-77-7	
DB35b	: Disperse Blue 35b	CASno 56524-76-6	
DB102	: Disperse Blue 102	CASno 12222-97-8	
DB106	: Disperse Blue 106	CASno 12223-01-7	
DB124	: Disperse Blue 124	CASno 61951-51-7	
DBr1	: Disperse Brown 1	CASno 23355-64-8	
DO1	: Disperse Orange 1	CASno 2581-69-3	C.I.no 11 080
DO3	: Disperse Orange 3	CASno 730-40-5	C.I.no 11 005
DO76	: Disperse Orange 76=37	CASno 13301-61-6	C.I.no 11 132
DR1	: Disperse Red 1	CASno 2872-52-8	C.I.no 11 110
DR11	: Disperse Red 11	CASno 2872-48-2	C.I.no 62 015
DR17	: Disperse Red 17	CASno 3179-89-3	C.I.no 11 210
DY1	: Disperse Yellow 1	CASno 119-15-3	C.I.no 10 345
DY3	: Disperse Yellow 3	CASno 2832-40-8	C.I.no 11 855
DY9	: Disperse Yellow 9	CASno 6373-73-5	C.I.no 10 37
DY39	: Disperse Yellow 39	CASno 12236-29-2	
DY49	: Disperse Yellow 49	CASno 54824-37-2	

* Disperse Blue 35 consists of a mixture of components, of which the monomethylated 1,8-diamino-4,5-dihydroxy-anthraquinone (CASno 56524-77-7) and the dimethylated 1,8-diamino-4,5-dihydroxy-anthraquinone (CASno 56524-76-6)
are responsible for the sensitizing potency of Disperse Blue 35, see also report iis09A04X of May 2009.

Abbreviations and details of carcinogenic colorants, see also OEKO-TEX® 100:

AR26	: Acid Red 26	CASno 3761-53-3	C.I. 16 150
BB26	: Basic Blue 26	CASno 2580-56-5	
BR9	: Basic Red 9	CASno 569-61-9	C.I. 42 500
BV3	: Basic Violet 3	CASno 548-62-9	
BV14	: Basic Violet 14	CASno 632-99-5	C.I. 42 510
DBl38	: Direct Black 38	CASno 1937-37-7	C.I. 30 235
DB6	: Direct Blue 6	CASno 2602-46-2	C.I. 22 610
DR28	: Direct Red 28	CASno 573-58-0	C.I. 22 120
DO11	: Disperse Orange 11	CASno 82-28-0	C.I. 60 700

Abbreviations and details of other banned colorants colorants, see also OEKO-TEX® 100:

DO149	: Disperse Orange 149	CASno 85136-74-9	
DY23	: Disperse Yellow 23	CASno 6250-23-3	C.I. 26 070
BG4o	: Basic Green 4 (oxalate)	CASno 2437-29-8	
BG4c	: Basic Green 4 (chloride)	CASno 569-64-2	
BG4f	: Basic Green 4 (free)	CASno 10309-95-2	
NB	: Navy Blue	EG-no.405-665-4	

Other reported Colorants in sample #22600; results in mg/kg

lab	DB 1	DB 7	DB 26	DB 35	DB 35a	DB 35b	DB 102	DB 106	DB 124	DBr 1	DO 3	DO 76
110	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
623	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2132	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2165	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2213	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2241	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2247	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2265	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2287	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2295	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2301	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2310	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2311	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2313	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2320	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2330	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2350	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2358	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2363	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2365	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15
2366	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2373	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2426	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2482	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2520	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92
2532	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2538	n.d.	n.d.	n.d.	-----	-----	-----	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2560	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2561	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2572	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2591	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2649	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2650	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2678	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2719	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2741	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2793	n.d.	n.d.	n.d.	n.d.	-----	-----	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2826	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2892	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2910	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2947	n.d.	n.d.	n.d.	n.d.	-----	-----	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2948	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2955	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2979	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2982	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3005	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	< 5	< 5	< 5	< 5	-----	-----	< 5	< 5	< 5	< 5	< 5	< 5
3176	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3197	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3200	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3209	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

lab	DB 1	DB 7	DB 26	DB 35	DB 35a	DB 35b	DB 102	DB 106	DB 124	DBr 1	DO 3	DO 76
3210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3214	<15	<15	<15	-----	<15	<15	<15	<15	<15	-----	<15	<15
3228	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3230	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Other reported Colorants in sample #22600; results in mg/kg -- continued --

lab	DR 1	DR 11	DR 17	DY 1	DY 3	DY 9	DY 39	DY 49	AR 26	BB 26	BR 9	BV 3
110	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
623	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2132	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2165	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2213	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2241	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2247	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2265	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2287	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2295	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2301	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2310	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2311	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2313	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2320	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2330	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2350	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2358	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2363	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2365	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15
2366	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2373	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	n.d.	n.d.	n.d.	n.d.	0.36	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2426	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2482	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2520	<2.92	101.2	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92
2532	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2538	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	n.d.	-----	n.d.	n.d.
2560	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2561	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2572	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2591	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----	-----	-----
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2649	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2650	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2678	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2719	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2741	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2793	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----	n.d.	n.d.
2826	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2892	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2910	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2947	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	n.d.	n.d.	n.d.
2948	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2955	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2979	< 15	50	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2982	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3005	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	-----	< 5	-----
3176	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3197	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3200	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3209	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

lab	DR 1	DR 11	DR 17	DY 1	DY 3	DY 9	DY 39	DY 49	AR 26	BB 26	BR 9	BV 3
3210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3214	<15	<15	<15	<15	<15	<15	<15	<15	-----	-----	-----	-----
3228	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3230	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Other reported Colorants in sample #22600; results in mg/kg -- continued --

lab	BV 14	DBI 38	DB 6	DR 28	DO 11	DO 149	DY 23	BG 4o	BG 4c	BG 4f	NB
110	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
623	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2132	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2165	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----
2213	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2241	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2247	<15	<15	<15	<15	<15	<15	-----	-----	-----	-----	-----
2255	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2265	< 15	-----	-----	-----	< 15	< 15	< 15	< 15	-----	-----	< 15
2287	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2295	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2301	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2310	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2311	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2313	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2320	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2330	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2350	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2358	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2363	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2365	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15
2366	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2373	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2426	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2482	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2520	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92
2532	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2538	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----	-----	-----
2560	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2561	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2572	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2591	-----	-----	-----	-----	n.d.	n.d.	n.d.	-----	-----	-----	-----
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2649	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2650	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2678	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2719	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2741	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2793	-----	n.d.	n.d.	n.d.	-----	-----	-----	-----	-----	-----	-----
2826	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	n.d.	-----	n.d.
2892	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2910	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----	-----	-----
2947	n.d.	-----	-----	-----	n.d.	n.d.	n.d.	n.d.	-----	-----	-----
2948	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2955	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2979	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2982	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3005	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	< 5	< 5	< 5	< 5	< 5	< 5	< 5	-----	-----	-----	-----
3176	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3197	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3200	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3209	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

lab	BV 14	DBI 38	DB 6	DR 28	DO 11	DO 149	DY 23	BG 4o	BG 4c	BG 4f	NB
3210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3214	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3228	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----
3230	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Other reported Colorants in sample #22601; results in mg/kg

lab	DB 1	DB 3	DB 7	DB 26	BD 35	DB 35a	DB 35b	DB 102	DB 106	DB 124	DBr 1	DO 1
110	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
623	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2132	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2165	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2213	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2241	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2247	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2265	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2287	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2295	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2301	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2310	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2311	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2313	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2320	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2330	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2350	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2358	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2363	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2365	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15
2366	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2373	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2426	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2482	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2520	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92
2532	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2538	n.d.	n.d.	n.d.	n.d.	-----	-----	-----	n.d.	n.d.	n.d.	n.d.	n.d.
2560	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2561	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2572	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2591	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2649	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2650	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2678	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2719	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2741	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2793	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----	n.d.	n.d.	n.d.	n.d.	n.d.
2826	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2892	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2910	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2947	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----	n.d.	n.d.	n.d.	n.d.	n.d.
2948	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2955	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2979	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2982	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3005	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	< 5	< 5	< 5	< 5	< 5	-----	-----	< 5	< 5	< 5	< 5	< 5
3176	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3197	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3200	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3209	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

lab	DB 1	DB 3	DB 7	DB 26	BD 35	DB 35a	DB 35b	DB 102	DB 106	DB 124	DBr 1	DO 1
3210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3214	<15	<15	<15	<15	-----	<15	<15	<15	<15	<15	-----	<15
3228	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3230	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Other reported Colorants in sample #22601; results in mg/kg -- continued --

lab	DO 3	DO 76	DR 1	DR 11	DR 17	DY 1	DY 3	DY 9	DY 39	DY 49	AR 26	BB 26
110	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
623	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2132	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2165	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2213	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2241	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2247	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2265	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2287	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2295	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2301	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2310	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2311	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2313	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2320	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2330	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2350	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2358	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2363	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2365	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15
2366	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2373	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2426	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2482	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2520	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92
2532	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2538	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	n.d.	-----
2560	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2561	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2572	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2591	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2649	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2650	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2678	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2719	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2741	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2793	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----
2826	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2892	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2910	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2947	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	n.d.
2948	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2955	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2979	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2982	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3005	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	-----
3176	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3197	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3200	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3209	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

lab	DO 3	DO 76	DR 1	DR 11	DR 17	DY 1	DY 3	DY 9	DY 39	DY 49	AR 26	BB 26
3210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3214	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	-----	-----
3228	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3230	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Other reported Colorants in sample #22601; results in mg/kg -- continued --

lab	BV 3	BV 14	DBI 38	DB 6	DR 28	DO 11	DO 149	DY 23	BG 4o	BG 4c	BG 4f	NB
110	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
623	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2132	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2165	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----
2213	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2241	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2247	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2265	< 15	< 15	-----	-----	-----	< 15	< 15	< 15	< 15	-----	-----	< 15
2287	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2295	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2301	-----	-----	4.06	-----	-----	-----	-----	-----	-----	-----	-----	-----
2310	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2311	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2313	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2320	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2330	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2350	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2358	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2363	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2365	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15	＜15
2366	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2373	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2426	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2482	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2520	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92	<2.92
2532	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2538	n.d.	detected	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----	-----	-----
2560	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2561	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2572	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2590	-----	2.183	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2591	-----	-----	-----	-----	-----	n.d.	n.d.	n.d.	-----	-----	-----	-----
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2649	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2650	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2678	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2719	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2741	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2793	n.d.	-----	n.d.	n.d.	n.d.	-----	-----	-----	-----	-----	-----	-----
2826	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	n.d.	-----	n.d.
2892	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2910	n.d.	-----	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----	-----	-----
2947	n.d.	n.d.	-----	-----	-----	n.d.	n.d.	n.d.	n.d.	-----	-----	-----
2948	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2955	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2979	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2982	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3005	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	-----	< 5	< 5	< 5	< 5	< 5	< 5	< 5	-----	-----	-----	-----
3176	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3197	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
3200	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3209	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

lab	BV 3	BV 14	DBI 38	DB 6	DR 28	DO 11	DO 149	DY 23	BG 4o	BG 4c	BG 4f	NB
3210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3214	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3228	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----
3230	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3237	-----	2.21	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

APPENDIX 3 Analytical details

lab	ISO/IEC17025 Accredited	Sample preparation	Sample intake used (grams)
110	Yes	Further cut	1 g
362	Yes	Used as received	1g
623	Yes	Further cut	1 g
2115	No	Used as received	0.5 g
2129	Yes	Used as received	0,5g
2132	No	Used as received	0.5 gram
2135	Yes	Used as received	0,5
2165	Yes	Further cut	0.5g
2213	Yes	Further cut	1.5 gram from each sample
2241	Yes	Further cut	0.5g
2247	Yes	Further cut	approx. 2,5gm
2255	Yes	Further cut	0.5
2265	Yes	Used as received	0,5
2287	No	Further cut	0.5g
2290	Yes	---	
2293	---	---	
2295	Yes	Further cut	0.5 gram
2301	No	Used as received	0.5000 gram
2310	Yes	Used as received	1
2311	Yes	Further cut	1
2313	No	Further cut	1.0g
2320	Yes	Further cut	1.0g and 0.5g
2330	Yes	Further cut	1.00g
2350	Yes	Used as received	1g
2352	Yes	Further cut	1.0g
2357	---	---	
2358	Yes	Further cut	1.0 g
2363	Yes	Further cut	1 g
2365	Yes	Further cut	0.5g
2366	No	Further cut	0.5
2370	Yes	Further cut	0.5 g
2373	Yes	Further cut	0.5g
2375	Yes	Further cut	0.5 gram
2378	---	---	
2379	Yes	Further cut	0.5 g
2380	Yes	Further cut	1.0 g
2382	Yes	Used as received	1.00g
2386	Yes	Further cut	0,5
2390	Yes	Further cut	1gram
2426	---	---	
2482	Yes	Used as received	0,5
2511	---	---	
2514	Yes	Further cut	0.2037 / 0.2249
2520	Yes	Further cut	0.5gm
2532	Yes	Further cut	0.5grams
2538	Yes	Further cut	0.5 gram
2560	Yes	Used as received	0.5 gm
2561	Yes	Used as received	0.5
2572	Yes	---	
2590	Yes	Used as received	0.5g
2591	Yes	Further cut	0.5 grams
2644	Yes	Used as received	1 g
2649	Yes	Further cut	1.5
2650	No	Used as received	0.5 grams
2678	---	---	
2719	Yes	Further cut	0.5
2741	Yes	Further cut	0.5
2793	No	Used as received	0.5
2826	Yes	Used as received	0.5g
2892	Yes	Further cut	0.5g
2910	Yes	Used as received	1.5
2947	No	Used as received	1
2948	Yes	Used as received	1gram
2955	Yes	Further cut	0.5gm
2979	No	Used as received	0.5
2982	Yes	Used as received	1.0001 grams
3005	---	---	
3116	Yes	Used as received	0.5 gram
3118	---	---	
3154	Yes	Further cut	0,5
3172	Yes	---	
3176	Yes	Used as received	0.5
3197	Yes	Further cut	0,5 g
3200	Yes	Used as received	0.5 g
3209	Yes	Used as received	0.5g

lab	ISO/IEC17025 Accredited	Sample preparation	Sample intake used (grams)
3210	Yes	Used as received	0.5g
3214	Yes	Further cut	0.5 g
3228	Yes	Used as received	0.5
3230	---	---	
3237	Yes	Used as received	0,5

APPENDIX 4

Number of participants per country

1 lab in AUSTRIA
7 labs in BANGLADESH
1 lab in BULGARIA
1 lab in CAMBODIA
2 labs in EGYPT
1 lab in FRANCE
7 labs in GERMANY
1 lab in GUATEMALA
4 labs in HONG KONG
6 labs in INDIA
3 labs in INDONESIA
4 labs in ITALY
1 lab in JAPAN
2 labs in KOREA, Republic of
1 lab in MAURITIUS
14 labs in P.R. of CHINA
3 labs in PAKISTAN
2 labs in SPAIN
1 lab in SRI LANKA
2 labs in TAIWAN
1 lab in THAILAND
3 labs in TUNISIA
5 labs in TURKEY
1 lab in U.S.A.
1 lab in UNITED KINGDOM
5 labs in VIETNAM

APPENDIX 5

Abbreviations

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

Literature

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