Results of Proficiency Test Colorants in textile (Allergenic & Carcinogenic) March 2019

Organised by: Institute for Interlaboratory Studies
Spijkenisse, the Netherlands

Author: ing. R.J. Starink
Corrector: ing. A.S. Noordman-de Neef
Report: iis19A06

June 2019

CONTENTS

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 Oeko-tex Standard 100 edition 03/2019. The Oeko-tex Standard 100 also lists many carcinogenic dyes and other banned dyestuffs. With every update of the standard new banned dyes are added.

The ban on the above 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. In this context and in response to requests from several laboratories, the Institute for Interlaboratory Studies (iis) organizes a proficiency test for allergenic dyes in textile in the annual proficiency test program since 2003. The scope was extended with carcinogenic and other banned dyes in 2016.

During the annual proficiency testing program 2018/2019, it was decided to continue the PT for the analyses of banned colorants in textile. In this interlaboratory study, 83 laboratories in 25 different countries registered for participation (see appendix 4). In this report, the results of the 2019 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 analyses for fit-for-use and homogeneity testing were subcontracted to an ISO/IEC 17025 accredited laboratory. It was decided to send 2 different textile samples of approximately 3 grams each. An orange colored cotton sample labelled #19523 and a salmon colored cotton sample labelled #19524 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/IEC 17043:2010 (R007), since January 2000, by the Dutch Accreditation Council (Raad voor Accreditatie). This PT falls under the accredited scope. This ensures strict adherence to protocols for sample preparation and statistical evaluation and 100% confidentiality of participant's data. Feedback from the participants on the reported data is encouraged and customer's satisfaction is measured on regular basis by sending out questionnaires.

2.2 PROTOCOL

The protocol followed in the organisation of this proficiency test was the one as described for proficiency testing in the report 'iis Interlaboratory Studies: Protocol for the Organization, Statistics and Evaluation' of June 2018 (iis-protocol, version 3.5). This protocol can be downloaded from 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

Two different textile batches were obtained from third party laboratories. The first batch, an orange colored cotton, fortified with Allergenic Colorants to detect Disperse Red 1 and Disperse Yellow 3 was used in a previous proficiency test on Banned Colorant Dyes (iis11A02, sample #11023). From the textile batch, after mixing well, 120 subsamples of approx. 3 grams each were prepared and labelled #19523. In iis11A02 the homogeneity of the textile batch was demonstrated sufficiently without doubt. Therefore, homogeneity of the subsamples #19523 was assumed.

The second batch, a salmon colored cotton, fortified with Carcinogenic Colorants to detect Disperse Orange 149 and Disperse Yellow 23. This batch was cut finely, well mixed and 120 subsamples of 3 grams were prepared and labelled #19524. The homogeneity of subsamples #19524 was checked by the determination of Disperse Orange 149 and Disperse Yellow 23 according to DIN54231 on 8 stratified randomly selected subsamples of each set. See the following table for the test results.

	Disperse Orange 149 in mg/kg	Disperse Yellow 23 in mg/kg
sample #19524-1	173.3	73.3
sample #19524-2	143.5	70.8
sample #19524-3	148.1	72.0
sample #19524-4	150.1	73.8
sample #19524-5	153.0	71.9
sample #19524-6	131.2	66.4
sample #19524-7	143.1	71.2
sample #19524-8	135.4	58.9

Table 1: homogeneity test results of subsamples #19524

From the above test results, the repeatabilities were calculated and compared with 0.3 times the corresponding reproducibilities of the reference test method in agreement with the procedure of ISO 13528, Annex B2 in the next table.

	Disperse Orange 149 in mg/kg	Disperse Yellow 23 in mg/kg
r (observed)	35.9	13.8
reference test method	DIN54261:05	DIN54261:05
0.3 * R (ref. test method)	35.4	16.8

Table 2: repeatability of subsamples #19524

The calculated repeatabilities of the homogeneity test results were in agreement with 0.3 times the corresponding reproducibilities mentioned in the reference test method. Therefore, homogeneity of the subsamples of #19524 was assumed.

To the participating laboratories was sent one sample labelled #19523 and one sample labelled #19524 on March 6, 2019.

2.5 ANALYSES

The participants were requested to determine the concentrations of 22 banned allergenic dyes, 11 banned carcinogenic dyes and 6 other banned dyes on sample #19523 and sample #19524, applying the analysis procedure that is routinely used in the laboratory.
It was also requested to report if the laboratory was accredited for the requested components that were determined.

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 results, but report as much significant figures as possible. It was also requested not to report ‘less than’ results, which are above the detection limit, because such results cannot be used for meaningful statistical evaluations.

To get comparable 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 appropriate reference test method 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 appendix 1 of this report. The laboratories are presented by their code numbers.

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalysis). Additional or corrected test results are used for data analysis and original test results are placed under 'Remarks' in the test 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 Organization, 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 dataset does not have a normal distribution, the (results of the) statistical evaluation should be used with due care.

According to ISO 5725 the original test results per determination were submitted to Dixon’s, Grubbs’ and/or Rosner’s outlier tests. Outliers are marked by D(0.01) for the Dixon’s test, by G(0.01) or DG(0.01) for the Grubbs’ test and by R(0.01) for the Rosner’s test. Stragglers are marked by D(0.05) for the Dixon’s test, by G(0.05) or DG(0.05) for the Grubbs’ test and by R(0.05) for the Rosner’s test. Both outliers and stragglers were not included in the calculations of 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 visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported 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 was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

To evaluate the performance of the participating laboratories the z-scores were calculated. As it was decided to evaluate the performance of the participants in this proficiency test (PT) against the literature requirements, the z-scores were calculated using a target standard deviation. This results in an evaluation independent of 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. In some cases, a reproducibility based on former iis proficiency tests could be used.

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

The z-scores were calculated according to:

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

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

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

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

4 EVALUATION

In this proficiency test no problems were encountered with the dispatch of the samples.
Five participants reported the test results after the deadline and five participants did not report any test results. The 78 participants reported 297 numerical test results. Observed were 10 outlying test results, which is 3.4% of the numerical test results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

All original data sets proved to have a normal Gaussian distribution.

4.1 EVALUATION PER SAMPLE AND PER COMPONENT

In this section, the 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 in appendix 1 together with the original data. The abbreviations used in these tables are listed in appendix 5.

As in previous PTs almost all participants reported to have used DIN54231 as test method.

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 #19523

Disperse Red 1 (CASno. 2872-52-8): The determination of this colorant at a concentration level of 232 mg/kg was problematic. One statistical outlier was observed. The calculated reproducibility after rejection of the statistical outlier is not in agreement with the reproducibility requirement estimated from the test method DIN54231:05.

Disperse Yellow 3 (CASno. 2832-40-8): The determination of this colorant at a concentration level of 283 mg/kg was problematic. Two statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with the reproducibility requirement estimated from the test method DIN54231:05.

No other components were found in sample #19523 (see appendix 2).

Sample #19524

Disperse Orange 149 (CASno. 85136-74-9): The determination of this colorant was not problematic at a concentration level of 124 mg/kg. Two statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in agreement with the reproducibility requirement estimated from the test method DIN54231:05.

Disperse Yellow 23 (CASno. 6250-23-3): The determination of this colorant at a concentration level of 56 mg/kg was not problematic. Five statistical outliers were observed. However, the calculated reproducibility after rejection of the statistical outliers is in good agreement with the reproducibility requirement estimated from the test method DIN54231:05.

No other components were found in sample #19524 (see appendix 2).

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibilities as declared by the relevant reference test methods and the reproducibilities as found for the group of participating laboratories. The number of test results, the average results, the calculated reproducibilities (2.8*standard deviation) and the target reproducibilities, derived (or estimated) from the official test method DIN54231:05 are compared in the next tables.

Component	unit	n	average	2.8 * sd	R(lit)
Disperse Red 1	mg/kg	76	231.8	216.9	185.7
Disperse Yellow 3	mg/kg	76	283.0	272.7	226.8

Table 3: reproducibilities of the colorants in textile sample #19523

Component	unit	n	average	2.8 * sd	R(lit)
Disperse Orange 149	mg/kg	68	124.5	71.6	99.7
Disperse Yellow 23	mg/kg	67	56.2	19.7	45.1

Table 4: reproducibilities of the colorants in textile sample #19524

Without further statistical calculations, it can be concluded that dependent on the sample the group of participating laboratories shows a good compliance to the majority of the analyses at the investigated concentration levels. See also the discussion in paragraphs 4.1 and 5.

4.3 EVALUATION OF THE PROFICIENCY TEST OF MARCH 2019 WITH PREVIOUS PTS

	March 2019	March 2018	February 2017	February 2016	March 2015
Number of reporting labs	78	88	86	80	83
Number of results reported	297	657	244	233	275
Number of statistical outliers	10	21	8	7	46
Percentage outliers	3.4%	3.2%	3.3%	3.0%	16.7%

Table 5: Comparison with previous proficiency tests

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

The uncertainties in the test results of the evaluated colorants in the iis19A06 PT are listed in below table and are compared with previous proficiency tests.

	March 2019	March 2018	February 2017	February 2016	2006 – 2015	target DIN54321
Disperse Blue 1	n.e.	n.e.	n.e.	n.e.	43%	27%
Disperse Blue 3	n.e.	n.e.	n.e.	n.e.	36 - 56%	27%
Disperse Blue 26	n.e.	n.e.	n.e.	n.e.	47 - 68%	27%
Disperse Blue 35	n.e.	n.e.	n.e.	n.e.	31 - 84%	27%
Disperse Blue 106	n.e.	n.e.	50%	n.e.	28%	27%
Disperse Brown 1	n.e	n.e	39%	n.e.	33%	27%
Disperse Orange 1	n.e.	35%	n.e.	n.e.	42 - 47%	27%
Disperse Orange 3	n.e.	n.e.	n.e.	n.e.	24 - 54%	27%
Disperse Orange 76/37	n.e.	33%	n.e.	n.e.	n.e	27%
Disperse Red 1	33%	n.e.	n.e.	n.e.	36 - 63%	27%
Disperse Red 11	n.e.	n.e.	n.e.	n.e.	41 - 65%	27%
Disperse Red 17	n.e.	28%	n.e.	28%	33%	27%
Disperse Yellow 1	n.e.	n.e.	n.e.	24%	n.e.	27%
Disperse Yellow 3	34%	21%	n.e.	30%	28-29%	27%
Disperse Yellow 9	n.e.	21%	n.e.	n.e.	31%	27%
Disperse Yellow 49	n.e.	n.e.	n.e.	n.e.	54%	27%
Direct Black 38	n.e.	n.e.	32%	n.e.	n.e.	27%
Disperse Orange 149	21%	27%	n.e.	n.e.	n.e	27%
Disperse Yellow 23	13%	17%	n.e.	n.e.	n.e	27%

Table 6: development of uncertainties over the last years

It is observed that the group performed worse at the determination of Disperse Yellow 3 in this PT than in previous ones. The determinations of Disperse Red 1, Disperse Orange 149 and Disperse Yellow 23 were performed better.

4.4 EVALUATION OF REQUESTED ADDITIONAL INFORMATION

One question was asked whether the laboratory has been accredited in accordance with ISO/IEC 17025 to determine these components. It appeared that sixty-two participants (75%) are accredited for determination of banned AZO-dyes in textile. Nine participants (11%) mentioned that the laboratory is not accredited for the determination of aromatic amines in textiles.

5 DISCUSSION

All reporting participants were able to detect in Disperse Red 1 and Disperse Yellow 3 in sample #19523 and Disperse Orange 149 and Disperse Yellow 23 in sample #19524. No other aromatic amines were detected.

When the results of this interlaboratory study were compared to the Ecolabelling Standards and Requirements for Textiles in EU and with Bluesign® BSSL (see Table 7), it was noticed that all participants would make identical decisions about the acceptability of the textiles for the determined components. All reporting laboratories would have reject samples #19523 and #19524 for all categories for having too much banned colorants.

Ecolabel	baby clothes	in direct skin contact	no direct skin contact
Bluesign® BSSL	<50 mg/kg	<50 mg/kg	<50 mg/kg
Oeko-Tex standard	<50 mg/kg	<50 mg/kg	<50 mg/kg

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

Sample #19523 was used in a previous proficiency test iis11A02 as sample #11023. The obtained PT results are quite comparable. Therefore, it is concluded that the samples textile containing Disperse Red 1 and Disperse Yellow 23 are at least stable for eight years.

	unit	#19523			#11023		
		n	mean	R(calc)	n	mean	R(calc)
Disperse Red 1	mg/kg	76	231.8	216.9	48	216.6	216.8
Disperse Yellow 23	mg/kg	76	283.0	272.7	43	218.3	171.1

Table 8: comparison of sample #19523 with #11023

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.

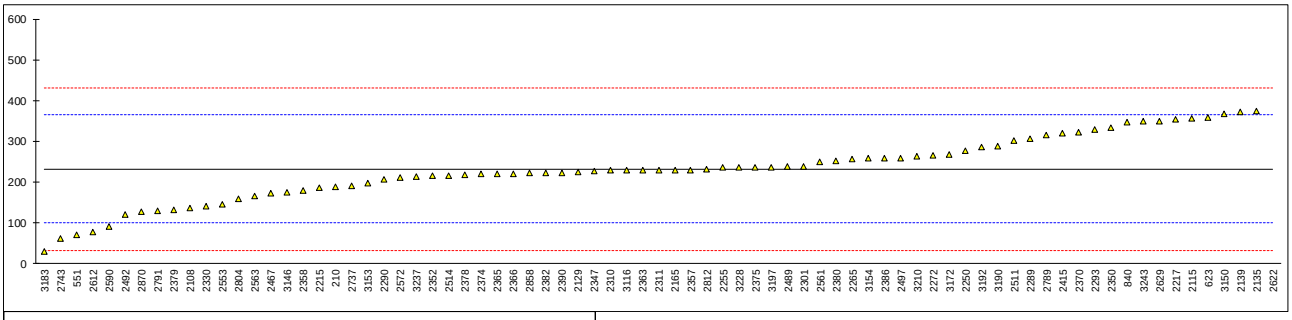
Each participating laboratory will have to evaluate its performance in this study and decide about any corrective actions if necessary. Therefore, participation on a regular basis in this scheme could be helpful to improve the performance and thus increase of the quality of the analytical results.

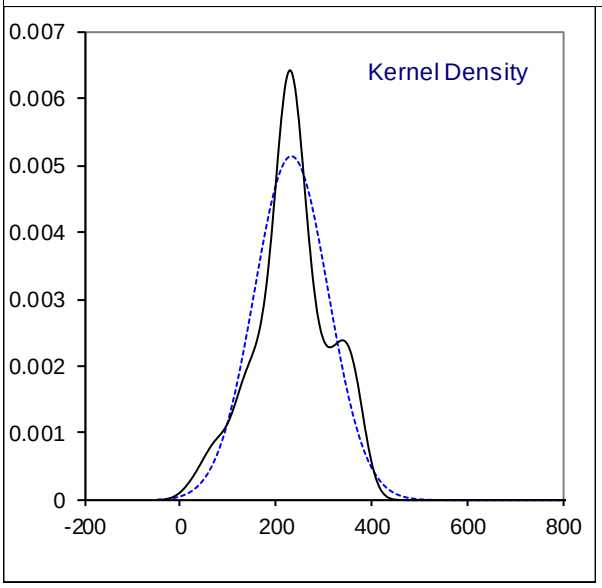
APPENDIX 1

Determination of Disperse Red 1 (CASno. 2872-52-8) in sample #19523; results in mg/kg

lab	method	value	mark	z(targ)	remarks
210	DIN54231	189.34		-0.64	
348		-----		-----	
362		-----		-----	
551	In house	69.825		-2.44	
623	DIN54231	358.92	C	1.92	First reported 411.27
840	DIN54231	347		1.74	
2108	DIN54231	136.8		-1.43	
2115	DIN54231	357.15		1.89	
2129	DIN54231	225		-0.10	
2135	DIN54231	373.82		2.14	
2139	DIN54231	371.3		2.10	
2165	DIN54231	230.4		-0.02	
2215	DIN54231	187.3		-0.67	
2217	DIN54231	353.06		1.83	
2250	DIN54231	278		0.70	
2255	DIN54231	235.11		0.05	
2265	DIN54231	255.6		0.36	
2272		265.9		0.51	
2289	DIN54231	306		1.12	
2290	DIN54231	205.8		-0.39	
2293	DIN54231	329.482		1.47	
2301	DIN54231	239.2	C	0.11	First reported 426.5
2310	DIN54231	228.3		-0.05	
2311	DIN54231	230.198		-0.02	
2330	DIN54231	141.05	C	-1.37	First reported 44.82
2347		226		-0.09	
2350	DIN54231	334.047		1.54	
2352	DIN54231	215.6		-0.24	
2357	DIN54231	230.4		-0.02	
2358	DIN54231	180.06		-0.78	
2363	DIN54231	229.8		-0.03	
2365	DIN54231	220.4		-0.17	
2366	DIN54231	221.0		-0.16	
2369		-----		-----	
2370	DIN54231	322		1.36	
2374	In house	220.0		-0.18	
2375	DIN54231	237.1		0.08	
2378	DIN54231	217.1		-0.22	
2379	DIN54231	132.80		-1.49	
2380	DIN54231	253.0		0.32	
2382	DIN54231	221.9		-0.15	
2386	DIN54231	258.6		0.40	
2390	DIN54231	222.06		-0.15	
2415	DIN54231	319.03		1.32	
2467	In house	173.46		-0.88	
2489	DIN54231	238.0		0.09	
2492	DIN54231	119.5		-1.69	
2495		-----		-----	
2497	DIN54231	259.43		0.42	
2511	DIN54231	302.04		1.06	
2514	DIN54231	216.54		-0.23	
2553	In house	146.26		-1.29	
2561	DIN54231	249.7568		0.27	
2563	DIN54231	166.7		-0.98	
2572	DIN54231	210.4		-0.32	
2590	DIN54231	91.188		-2.12	
2612	In house	78.4756		-2.31	
2622	EN-ISO16373-2	1211	R(0.01)	14.76	
2629	DIN54231	349.8		1.78	
2644		-----		-----	
2737	DIN54231	190.26		-0.63	
2743	DIN54231	62.40012		-2.55	
2789	DIN54231	314.55		1.25	
2791	DIN54231	128.95		-1.55	
2804	In house	159		-1.10	
2812	DIN54231	231.17		-0.01	
2858	DIN54231	221.50		-0.15	
2870	DIN54231	127		-1.58	
3116	DIN54231	229.48		-0.03	
3118		-----		-----	
3146	DIN54231	176		-0.84	
3150	DIN54231	366.82		2.04	
3153	DIN54231	198.6		-0.50	
3154	DIN54231	258.09		0.40	

lab	method	value	mark	z(targ)	remarks
3172	DIN54231	267.35		0.54	
3183	DIN54231	29.261		-3.05	
3190	DIN54231	289.0		0.86	
3192	DIN54231	286.78		0.83	
3197	DIN54231	237.2		0.08	
3210	DIN54231	264.12		0.49	
3228	DIN54231	235.2		0.05	
3237	DIN54231	214.48		-0.26	
3243	DIN54231	349.13		1.77	
	normality	OK			
	n	76			
	outliers	1			
	mean (n)	231.755	RSD = 33%		
	st.dev. (n)	77.4663			
	R(calc.)	216.906			
	st.dev.(DIN54231:05)	66.3281			
	R(DIN54231:05)	185.719			

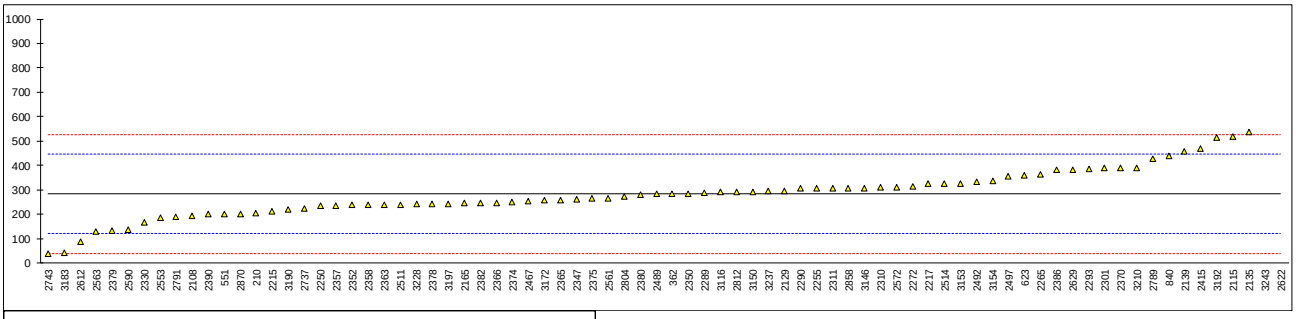


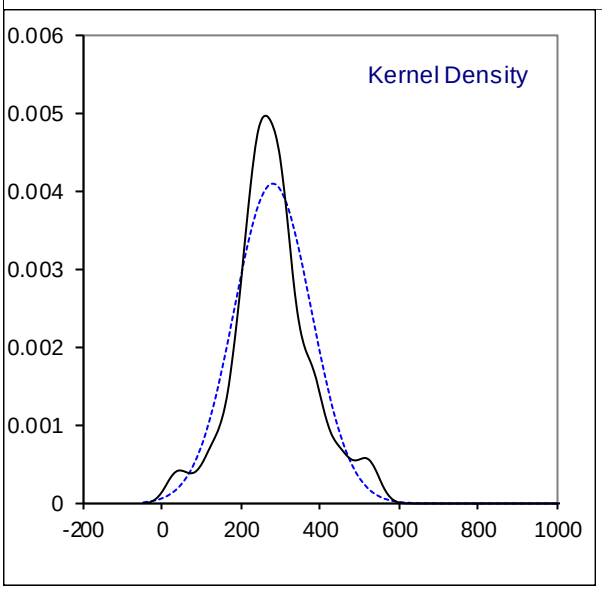


Determination of Disperse Yellow 3 (CASno. 2832-40-8) in sample #19523; results in mg/kg

lab	method	value	mark	z(targ)	remarks
210	DIN54231	203.01		-0.99	
348		-----		-----	
362	In house	283		0.00	
551	In house	200.38	C	-1.02	First reported 585
623	DIN54231	358.92		0.94	
840	DIN54231	440		1.94	
2108	DIN54231	192.6		-1.12	
2115	DIN54231	519.70		2.92	
2129	DIN54231	296		0.16	
2135	DIN54231	536.31		3.13	
2139	DIN54231	457.0	C	2.15	First reported 547
2165	DIN54231	247.3		-0.44	
2215	DIN54231	210.7		-0.89	
2217	DIN54231	325	C	0.52	First reported 550.87
2250	DIN54231	234		-0.60	
2255	DIN54231	305.2		0.27	
2265	DIN54231	363.3		0.99	
2272		313.8		0.38	
2289	DIN54231	288		0.06	
2290	DIN54231	305.0		0.27	
2293	DIN54231	386.445		1.28	
2301	DIN54231	390.0		1.32	
2310	DIN54231	310.2		0.34	
2311	DIN54231	305.38		0.28	
2330	DIN54231	166.31		-1.44	
2347		260		-0.28	
2350	DIN54231	283.828		0.01	
2352	DIN54231	238.8		-0.55	
2357	DIN54231	234.1		-0.60	
2358	DIN54231	239.52		-0.54	
2363	DIN54231	240		-0.53	
2365	DIN54231	258.9		-0.30	
2366	DIN54231	248.1		-0.43	
2369		-----		-----	
2370	DIN54231	391		1.33	
2374	In house	248.5		-0.43	
2375	DIN54231	264.9		-0.22	
2378	DIN54231	242.2		-0.50	
2379	DIN54231	134.79		-1.83	
2380	DIN54231	280.0		-0.04	
2382	DIN54231	247.8		-0.43	
2386	DIN54231	383.6		1.24	
2390	DIN54231	199.53		-1.03	
2415	DIN54231	469.65		2.31	
2467	In house	253.22		-0.37	
2489	DIN54231	282.3		-0.01	
2492	DIN54231	333.3		0.62	
2495		-----		-----	
2497	DIN54231	355.61		0.90	
2511	DIN54231	240.02		-0.53	
2514	DIN54231	325.80		0.53	
2553	In house	185.68		-1.20	
2561	DIN54231	266.8729		-0.20	
2563	DIN54231	130.8		-1.88	
2572	DIN54231	311.1		0.35	
2590	DIN54231	136.298		-1.81	
2612	In house	88.8894		-2.40	
2622	EN-ISO16373-2	2626	R(0.01)	28.93	
2629	DIN54231	383.8		1.25	
2644		-----		-----	
2737	DIN54231	224.08		-0.73	
2743	DIN54231	37.49162		-3.03	
2789	DIN54231	426.25		1.77	
2791	DIN54231	189.44		-1.15	
2804	In house	273		-0.12	
2812	DIN54231	290.72		0.10	
2858	DIN54231	306.50		0.29	
2870	DIN54231	202		-1.00	
3116	DIN54231	290.00		0.09	
3118		-----		-----	
3146	DIN54231	308		0.31	
3150	DIN54231	291.71		0.11	
3153	DIN54231	326.7		0.54	
3154	DIN54231	337.45		0.67	

lab	method	value	mark	z(targ)	remarks
3172	DIN54231	256.86		-0.32	
3183	DIN54231	42.793		-2.97	
3190	DIN54231	218.8		-0.79	
3192	DIN54231	514.80		2.86	
3197	DIN54231	243.8		-0.48	
3210	DIN54231	391.43		1.34	
3228	DIN54231	241.9		-0.51	
3237	DIN54231	294.59		0.14	
3243	DIN54231	1102.23	R(0.01)	10.12	
	normality	OK			
	n	76			
	outliers	2			
	mean (n)	282.959	RSD = 34%		
	st.dev. (n)	97.4099			
	R(calc.)	272.748			
	st.dev.(DIN54231:05)	80.9828			
	R(DIN54231:05)	226.752			

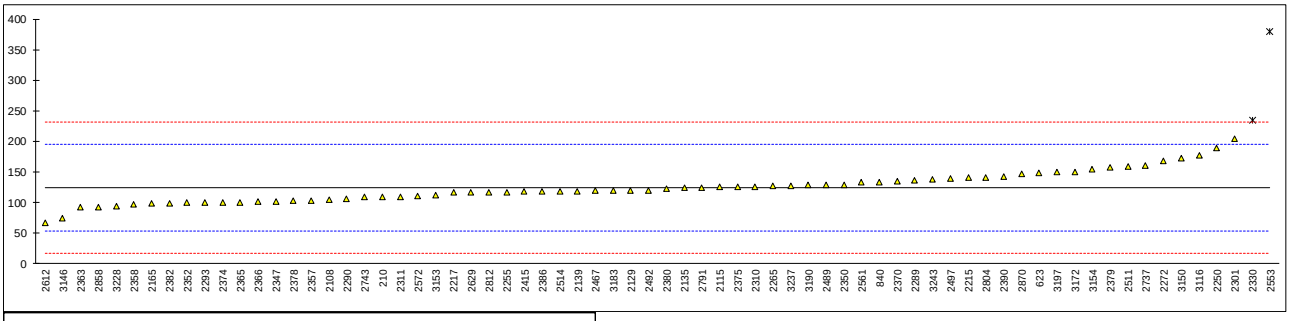


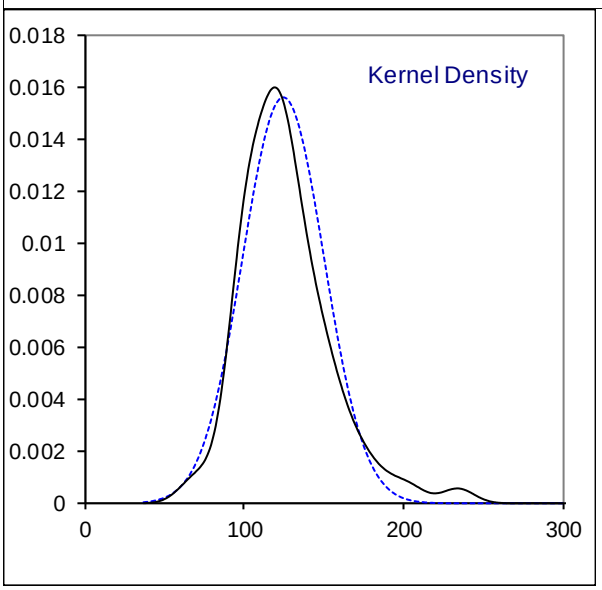


Determination of Disperse Orange 149 (CASno. 85136-74-9) in sample #19524; results in mg/kg

lab	method	value	mark	z(targ)	remarks
210	DIN54231	108.44		-0.45	
348		-----		-----	
362		-----		-----	
551		-----		-----	
623	DIN54231	148.44		0.67	
840	DIN54231	134		0.27	
2108	DIN54231	105.3		-0.54	
2115	DIN54231	124.97		0.01	
2129	DIN54231	119.5		-0.14	
2135	DIN54231	124.11		-0.01	
2139	DIN54231	118.9		-0.16	
2165	DIN54231	97.8		-0.75	
2215	DIN54231	140.6	C	0.45	First reported 240.6
2217	DIN54231	116.0		-0.24	
2250	DIN54231	189.8	C	1.83	First reported 854
2255	DIN54231	116.9		-0.21	
2265	DIN54231	127.3		0.08	
2272		168.5		1.24	
2289	DIN54231	136		0.32	
2290	DIN54231	105.7		-0.53	
2293	DIN54231	99.64	C	-0.70	First reported ND
2301	DIN54231	204.3	C	2.24	First reported 307.5
2310	DIN54231	126.4		0.05	
2311	DIN54231	109.85		-0.41	
2330	DIN54231	234.28	C,R(0.01)	3.08	First reported 292.23
2347	DIN54231	102		-0.63	
2350	DIN54231	129.153		0.13	
2352	DIN54231	99.5		-0.70	
2357	DIN54231	103.0		-0.60	
2358	DIN54231	96.69		-0.78	
2363	DIN54231	92.2		-0.91	
2365	DIN54231	100.4		-0.68	
2366	DIN54231	100.8		-0.66	
2369		-----		-----	
2370	DIN54231	135		0.30	
2374	In house	100.0		-0.69	
2375	DIN54231	125.5		0.03	
2378	GB/T23345	102.8		-0.61	
2379	DIN54231	156.83	C	0.91	First reported 201.04
2380	DIN54231	122.8		-0.05	
2382	DIN54231	98.2		-0.74	
2386	DIN54231	117.9		-0.18	
2390	DIN54231	142.13	C	0.50	First reported 212.52
2415	DIN54231	117.80		-0.19	
2467		118.93		-0.16	
2489	DIN54231	128.6		0.12	
2492	DIN54231	120.2		-0.12	
2495		-----		-----	
2497		139.38		0.42	
2511	DIN54231	159.31		0.98	
2514	DIN54231	117.9		-0.18	
2553		380	C,R(0.01)	7.17	First reported 447.5
2561	DIN54231	133.4469		0.25	
2563		-----		-----	
2572	DIN54231	109.9		-0.41	
2590		-----		-----	
2612	In house	66.6872		-1.62	
2622		-----		-----	
2629	DIN54231	116.7		-0.22	
2644		-----		-----	
2737	DIN54231	159.82		0.99	
2743	DIN54231	108.37789		-0.45	
2789		-----		-----	
2791	DIN54231	124.32		0.00	
2804	In house	141		0.46	
2812	DIN54231	116.83		-0.21	
2858	DIN54231	92.56		-0.90	
2870	DIN54231	147		0.63	
3116	DIN54231	177.63		1.49	
3118		-----		-----	
3146	DIN54231	75		-1.39	
3150	DIN54231	171.96		1.33	
3153	DIN54231	111.6		-0.36	
3154	DIN54231	154.01		0.83	

lab	method	value	mark	z(targ)	remarks
3172	DIN54231	149.7		0.71	
3183	DIN54231	119.230		-0.15	
3190	DIN54231	128.1		0.10	
3192		-----		-----	
3197	DIN54231	149.4		0.70	
3210		-----		-----	
3228	DIN54231	94.4		-0.84	
3237	DIN54231	127.87		0.10	
3243	DIN54231	137.8125		0.38	
	normality	OK			
	n	68			
	outliers	2			
	mean (n)	124.453	RSD = 21%		
	st.dev. (n)	25.5681			
	R(calc.)	71.591			
	st.dev.(DIN54231:05)	35.6185			
	R(DIN54231:05)	99.732			

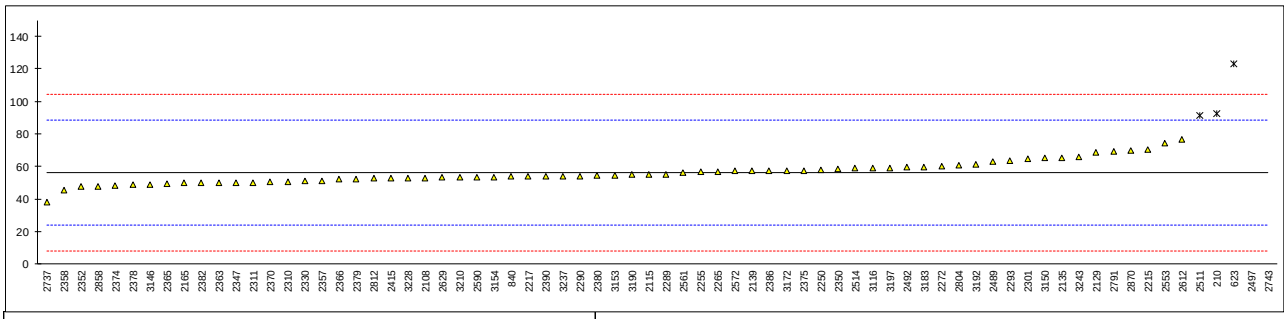


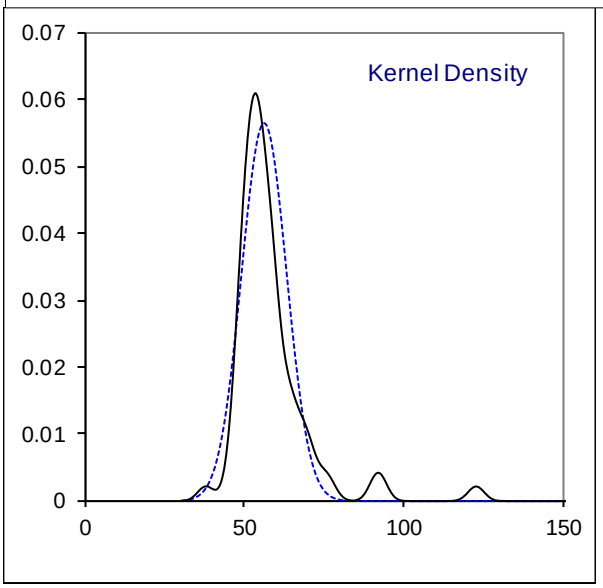


Determination of Disperse Yellow 23 (CASno. 6250-23-3) in sample #19524; results in mg/kg

lab	method	value	mark	z(targ)	Remarks
210	DIN54231	92.7	R(0.01)	2.27	
348		-----		-----	
362		-----		-----	
551		-----		-----	
623	DIN54231	122.85	C,R(0.01)	4.14	First reported 136.45
840	DIN54231	53.7		-0.16	
2108	DIN54231	53		-0.20	
2115	DIN54231	54.94		-0.08	
2129	DIN54231	68.4		0.76	
2135	DIN54231	65.39		0.57	
2139	DIN54231	57.2		0.06	
2165	DIN54231	49.8		-0.40	
2215	DIN54231	70.34		0.88	
2217	DIN54231	54.064		-0.14	
2250	DIN54231	58		0.11	
2255	DIN54231	56.78		0.03	
2265	DIN54231	56.9		0.04	
2272		60.4		0.26	
2289	DIN54231	55		-0.08	
2290	DIN54231	54.2		-0.13	
2293	DIN54231	63.47		0.45	
2301	DIN54231	64.5		0.51	
2310	DIN54231	50.7		-0.34	
2311	DIN54231	50.01		-0.39	
2330	DIN54231	50.87		-0.33	
2347	DIN54231	50		-0.39	
2350	DIN54231	58.550		0.14	
2352	DIN54231	47.5		-0.54	
2357	DIN54231	51.0		-0.33	
2358	DIN54231	45.65		-0.66	
2363	DIN54231	50		-0.39	
2365	DIN54231	49.6		-0.41	
2366	DIN54231	52.2		-0.25	
2369		-----		-----	
2370	DIN54231	50.6		-0.35	
2374	In house	48.5		-0.48	
2375	DIN54231	57.4		0.07	
2378	GB/T23345	48.7		-0.47	
2379	DIN54231	52.36		-0.24	
2380	DIN54231	54.3		-0.12	
2382	DIN54231	49.8		-0.40	
2386	DIN54231	57.3		0.07	
2390	DIN54231	54.09		-0.13	
2415	DIN54231	52.80		-0.21	
2467		-----		-----	
2489	DIN54231	63.0		0.42	
2492	DIN54231	59.6		0.21	
2495		-----		-----	
2497		190.65	C,R(0.01)	8.35	First reported 192.17
2511	DIN54231	91.48	R(0.01)	2.19	
2514	DIN54231	58.86		0.16	
2553		74.40		1.13	
2561	DIN54231	55.9327		-0.02	
2563		-----		-----	
2572	DIN54231	57.1		0.05	
2590	DIN54231	53.231		-0.19	
2612	In house	76.752	C	1.27	First reported <LOQ
2622		-----		-----	
2629	DIN54231	53.1		-0.20	
2644		-----		-----	
2737	DIN54231	37.91		-1.14	
2743	DIN54231	202.37145	C,R(0.01)	9.08	First reported 176.95491
2789		-----		-----	
2791	DIN54231	69.41		0.82	
2804	In house	60.9		0.29	
2812	DIN54231	52.62		-0.22	
2858	DIN54231	47.92		-0.52	
2870	DIN54231	70		0.85	
3116	DIN54231	59.06		0.18	
3118		-----		-----	
3146	DIN54231	49		-0.45	
3150	DIN54231	65.04		0.55	
3153	DIN54231	54.6		-0.10	
3154	DIN54231	53.49		-0.17	

lab	method	value	mark	z(targ)	Remarks
3172	DIN54231	57.35		0.07	
3183	DIN54231	59.621		0.21	
3190	DIN54231	54.8		-0.09	
3192	DIN54231	61.25		0.31	
3197	DIN54231	59.1		0.18	
3210	DIN54231	53.19		-0.19	
3228	DIN54231	52.9		-0.21	
3237	DIN54231	54.1		-0.13	
3243	DIN54231	65.7625		0.59	
	normality	OK			
	n	67			
	outliers	5			
	mean (n)	56.239	RSD = 13%		
	st.dev. (n)	7.0474			
	R(calc.)	19.733			
	st.dev.(DIN54231:05)	16.0956			
	R(DIN54231:05)	45.068			





APPENDIX 2: Other reported banned colorants

Abbreviations and details of allergenic colorants, see also Oekotex 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 Oekotex 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 Oekotex 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 allergenic Colorants in sample #19523; 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	DO 3	DO 76	DR 11	DR 17	DY 1
210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
348	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
551	ND	ND	ND	ND	ND	10.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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.	n.d.	n.d.	n.d.	n.d.	n.d.
840	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2108	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2139	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
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.	n.d.	n.d.	n.d.	n.d.	n.d.
2215	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2217	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2250	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	nd	nd	nd	nd	nd	Nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2265	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
2272	<15	<15	<15	<15	<15	-----	-----	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2289	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	ND	ND	ND	ND	ND	-----	-----	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2301	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2310	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2311	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2347	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2350	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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.	n.d.	n.d.	n.d.	n.d.	n.d.
2363	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2365	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2366	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2369	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2374	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2415	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2467	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2489	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2492	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2495	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2497	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2553	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2561	<15	<15	<15	<15	<15	-----	-----	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2563	n. d.	n. d.	n. d.	n. d.	n. d.	-----	-----	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.
2572	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2612	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ
2622	< LQ	< LQ	< LQ	4.7	< LQ	-----	-----	< LQ	< LQ	< LQ	< LQ	< LQ	1.6	1.1	< LQ	< LQ	< LQ
2629	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2737	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2743	-----	-----	-----	-----	38.997	-----	-----	-----	-----	-----	-----	-----	0.757	2.942	-----	-----	-----
2789	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2791	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2804	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2812	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2858	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d
2870	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3146	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3150	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3153	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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	DO 3	DO 76	DR 11	DR 17	DY 1
3172	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
3183	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3190	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3192	<37,5	<37,5	-----	-----	-----	-----	-----	-----	<37,5	-----	-----	-----	<37,5	<37,5	-----	-----	-----
3197	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3210	0	0	0	0	-----	0	-----	0	0	0	0	0	0	0	0	0	0
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.	n.d.	n.d.	n.d.	n.d.	n.d.
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3243	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

Other reported allergenic Colorants in sample #19523; results in mg/kg -- continued --

lab	DY 9	DY 39	DY 49	AR 26	BB 26	BR 9	BV 3	BV 14	DBl 38	DB 6	DR 28	DO 11	DO 149	DY 23	BG 4ocf	NB
210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
348	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
551	ND	ND	ND	ND	-----	ND	-----	ND	ND	ND	ND	ND	ND	ND	-----	ND
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.	n.d.	n.d.	n.d.	n.d.
840	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2108	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2139	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
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.	n.d.	n.d.	-----	-----
2215	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2217	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2250	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2265	< 20	< 20	< 20	-----	-----	-----	-----	-----	-----	-----	-----	< 20	< 20	< 20	-----	-----
2272	<15	<15	<15	<15	-----	<15	<15	<15	<15	<15	<15	<15	<15	<15	-----	-----
2289	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	ND	ND	ND	ND	-----	ND	ND	ND	ND	-----	ND	ND	ND	ND	ND	-----
2301	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-----	-----
2310	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2311	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2347	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<3
2350	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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.	n.d.	n.d.	n.d.	n.d.
2363	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2365	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2366	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2369	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2374	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2415	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2467	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2489	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2492	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2495	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2497	-----	-----	-----	-----	-----	-----	-----	-----	-----	169.3	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2553	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2561	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2563	n. d.	n. d.	n. d.	-----	-----	-----	-----	-----	-----	-----	-----	n. d.	-----	-----	-----	-----
2572	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2612	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ	< LQ
2622	< LQ	< LQ	< LQ	< LQ	-----	1.1	-----	2.1	< LQ	< LQ	< LQ	< LQ	-----	-----	-----	-----
2629	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

lab	DY 9	DY 39	DY 49	AR 26	BB 26	BR 9	BV 3	BV 14	DBI 38	DB 6	DR 28	DO 11	DO 149	DY 23	BG 4ocf	NB
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2737	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2743	-----	-----	-----	-----	-----	-----	-----	-----	-----	41.24	-----	-----	-----	-----	-----	-----
2789	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2791	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2804	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----
2812	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2858	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d
2870	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3146	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3150	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3153	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
3183	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3190	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3192	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	<37,5	-----	-----
3197	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3210	0	0	0	0	-----	0	0	-----	0	0	0	0	-----	0	-----	-----
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.	n.d.	n.d.	-----	-----
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3243	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----

Other reported allergenic Colorants in sample #19524; 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	DO 3	DO 76	DR 1	DR 11	DR 17
210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
348	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
551	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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.	n.d.	n.d.	n.d.	n.d.	n.d.
840	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2108	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2115	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1.63	-----	-----	-----
2129	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2139	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
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.	n.d.	n.d.	n.d.	n.d.	n.d.
2215	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2217	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1.051	-----	-----	-----
2250	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2265	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
2272	<15	<15	<15	<15	<15	-----	-----	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2289	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	ND	ND	ND	ND	ND	-----	-----	ND	ND	ND	ND	ND	ND	< 5	ND	ND	ND
2301	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2310	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2311	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2347	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2350	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2357	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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.	n.d.	n.d.	n.d.	n.d.	n.d.
2363	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2365	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2366	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2369	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2374	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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	DO 3	DO 76	DR 1	DR 11	DR 17
2415	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2467	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1.44	-----	-----	-----
2489	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2492	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2495	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2497	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2553	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2561	<15	<15	<15	<15	<15	-----	-----	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2563	n. d.	n. d.	n. d.	n. d.	n. d.	-----	-----	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.	n. d.
2572	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2612	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	4.02	<LQ	<LQ	<LQ
2622	<LQ	<LQ	<LQ	1.3	1.5	-----	-----	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	1.4	<LQ	<LQ	<LQ
2629	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2737	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2743	-----	-----	-----	-----	0.949	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2789	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2791	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2804	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2812	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2858	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d
2870	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3146	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3150	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2.17	-----	-----	-----
3153	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
3183	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2.342	-----	-----	-----
3190	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3192	<37,5	<37,5	-----	-----	-----	-----	-----	-----	<37,5	-----	-----	-----	<37,5	<37,5	<37,5	-----	-----
3197	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3210	0	0	0	0	-----	0	-----	0	0	0	0	0	0	0	0	0	0
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.	n.d.	n.d.	n.d.	n.d.	n.d.
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3243	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

Other reported allergenic Colorants in sample #19524; results in mg/kg -- continued --

lab	DY 1	DY 3	DY 9	DY 39	DY 49	AR 26	BB 26	BR 9	BV 3	BV 14	DB 38	DB 6	DR 28	DO 11	BG 4ocf	NB
210	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
348	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
362	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
551	ND	9.15	ND	ND	ND	ND	-----	ND	-----	ND	ND	ND	ND	ND	-----	ND
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.	n.d.	n.d.	n.d.	n.d.
840	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
2108	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2115	-----	3.04	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2129	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2135	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2139	-----	457	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
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.	n.d.	n.d.	-----	-----
2215	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2217	-----	3.096	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2250	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2255	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2265	< 20	< 20	< 20	< 20	< 20	-----	-----	-----	-----	-----	-----	-----	-----	< 20	-----	-----
2272	<15	<15	<15	<15	<15	<15	-----	<15	<15	<15	<15	<15	<15	<15	-----	-----
2289	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2290	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2293	ND	ND	ND	ND	ND	ND	-----	ND	ND	ND	ND	ND	ND	ND	ND	-----
2301	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-----	-----
2310	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2311	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2330	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2347	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<3
2350	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2352	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

lab	DY 1	DY 3	DY 9	DY 39	DY 49	AR 26	BB 26	BR 9	BV 3	BV 14	DB 38	DB 6	DR 28	DO 11	BG 4ocf	NB
2357	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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.	n.d.	n.d.	n.d.	n.d.
2363	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2365	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2366	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2369	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2370	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2374	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2375	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2379	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2380	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2382	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2386	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2390	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2415	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2467	-----	3.56	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2489	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2492	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2495	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2497	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2511	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2514	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2553	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2561	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
2563	n. d.	4.4	n. d.	n. d.	n. d.	-----	-----	-----	-----	-----	-----	-----	-----	n. d.	-----	-----
2572	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15
2590	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2612	<LQ	3.204	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ	<LQ
2622	<LQ	1.6	<LQ	<LQ	<LQ	<LQ	-----	1.1	-----	1.1	<LQ	<LQ	<LQ	<LQ	-----	-----
2629	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2644	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2737	-----	1.92	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2743	-----	1.296	-----	-----	-----	-----	-----	-----	-----	-----	-----	1.487	-----	-----	-----	-----
2789	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2791	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2804	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-----	-----
2812	-----	2.22	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2858	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d	n.d
2870	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3116	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3118	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3146	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3150	-----	2.59	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3153	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3154	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3172	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
3183	-----	4.378	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3190	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
3192	-----	<37,5	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3197	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3210	0	0	0	0	0	0	-----	0	0	-----	0	0	0	0	-----	-----
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.	n.d.	n.d.	-----	-----
3237	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3243	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.

APPENDIX 3

Accreditation by ISO17025

lab	Accredited	lab	Accredited
210	No	2390	Yes
348	---	2415	Yes
362	---	2467	---
551	No	2489	Yes
623	Yes	2492	Yes
840	Yes	2495	---
2108	Yes	2497	Yes
2115	No	2511	---
2129	Yes	2514	Yes
2135	Yes	2553	Yes
2139	Yes	2561	Yes
2165	Yes	2563	Yes
2215	Yes	2572	---
2217	Yes	2590	Yes
2250	Yes	2612	Yes
2255	Yes	2622	Yes
2265	Yes	2629	Yes
2272	Yes	2644	---
2289	Yes	2737	Yes
2290	Yes	2743	Yes
2293	No	2789	Yes
2301	Yes	2791	Yes
2310	Yes	2804	No
2311	Yes	2812	Yes
2330	Yes	2858	Yes
2347	Yes	2870	Yes
2350	Yes	3116	Yes
2352	Yes	3118	---
2357	Yes	3146	Yes
2358	Yes	3150	Yes
2363	Yes	3153	No
2365	Yes	3154	---
2366	Yes	3172	Yes
2369	---	3183	---
2370	Yes	3190	Yes
2374	Yes	3192	Yes
2375	Yes	3197	Yes
2378	No	3210	No
2379	Yes	3228	Yes
2380	Yes	3237	---
2382	Yes	3243	No
2386	Yes		

APPENDIX 4

Number of participants per country

4 labs in BANGLADESH
1 lab in BRAZIL
1 lab in BULGARIA
1 lab in CAMBODIA
1 lab in FRANCE
14 labs in GERMANY
1 lab in GUATEMALA
5 labs in HONG KONG
1 lab in HUNGARY
5 labs in INDIA
3 labs in INDONESIA
8 labs in ITALY
2 labs in KOREA
1 lab in MOROCCO
17 labs in P.R. of CHINA
1 lab in PAKISTAN
1 lab in ROMANIA
2 labs in SPAIN
1 lab in SRI LANKA
1 lab in TAIWAN R.O.C.
1 lab in THAILAND
1 lab in TUNISIA
4 labs in TURKEY
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
ex = test result excluded from statistical evaluation
n.a. = not applicable
n.e. = not evaluated
n.d. = not detected

Literature:

1 iis-Interlaboratory Studies: Protocol for the Organisation, Statistics and Evaluation, June 2018
2 DIN54231:2004
3 DIN54234:2005
4 XP G 08-014:97
5 P.L. Davies, Fr. Z. Anal. Chem, 351, 513, (1988)
6 W.J. Conover, Practical; Nonparametric Statistics, J. Wiley&Sons, NY, 302, (1971)
7 ISO 5725, (1986)
8 ISO 5725, parts 1-6, (1994)
9 ISO 13528:05
10 M. Thompson and R. Wood, J. AOAC Int, 76, 926, (1993)
11 W.J. Youden and E.H. Steiner, Statistical Manual of the AOAC, (1975)
12 G. Rohm, J. Bohnen & H. Kruessmann, GIT Labor-Fachzeitschrift, 11, 1080, (1997)
13 Bernard Rosner, Percentage Points for a Generalized ESD Many-Outlier Procedure, Technometrics, 25(2), 165-172, (1983)
14 Analytical Methods Committee Technical brief, No 4, January 2001
15 P.J. Lowthian and M. Thompson, The Royal Society of Chemistry, Analyst, 127, 1359-1364, (2002)
16 Horwitz, W and Albert, R, J. AOAC Int, 79, 3, 589, (1996)