Results of Proficiency Test Chromium VI in leather April 2016

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1 INTRODUCTION

Chromium VI is a toxic and mutagenic substance. In the leather industry, Chromium containing substances could be used in the production process. Of all Chromium compounds, primarily Chromium VI was used, but this has been replaced by the less hazardous Chromium III in most applications. The regulations for the presence of Chromium VI for leather continue to become stricter. But even if no Chromium VI is used in the production of leather, it can still be formed from Chromium III, when production or end-use circumstances are not controlled.

The Institute for Interlaboratory Studies organizes since 2014 an interlaboratory study for the determination of Chromium VI in leather. In the annual proficiency test program of 2015/2016, this proficiency test was continued.

In the interlaboratory study of April 2016, 147 laboratories from 29 different countries have registered for participation (see appendix 3). In this report, the results of the 2016 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 in Spijkenisse was the organizer of this proficiency test. Due to lack of a sufficient amount of suitable materials it was decided to use in this proficiency test only one leather sample without aging. Sample analyses for fit-for-use and homogeneity testing were subcontracted to an accredited laboratory. It was decided to send one sample of approximately 5 grams, labelled #16540.

The participants were requested to report rounded and unrounded test results. The unrounded test results were preferably used for statistical evaluation.

2.1 QUALITY SYSTEM

The Institute for Interlaboratory Studies in Spijkenisse, the Netherlands, has implemented a quality system based on IEC/ISO17043:2010. 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 April 2014 (iis-protocol, version 3.3). 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

A leather sample, labelled (#16540), was prepared by a third party. It was cut in small squares and the material was mixed thoroughly. Seven stratified randomly selected samples were tested using ISO17075 to check the homogeneity of the batch. The test results of the homogeneity tests are shown in table 1.

Chromium VI	#16540 (mg/kg)
#16540-1	4.31
#16540-2	4.76
#16540-3	4.81
#16540-4	4.30
#16540-5	4.62
#16540-6	4.01
#16540-7	4.48

table 1: homogeneity test results of subsamples #16540

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

Chromium VI	#16540 (mg/kg)		
r (observed)	0.80		
reference test method	ISO17075:2007		
r (reference test method)	0.81		
0.3 x R (reference test method)	0.60		

table 2: evaluation of the repeatability of subsamples #16540

The repeatability of the results of the homogeneity tests for Chromium VI of sample #16540 was not in agreement with 0.3 times the reproducibility mentioned in the reference method ISO17075:2007. However, it was in full agreement with the repeatability of the reference method ISO17075:2007. Therefore, homogeneity of the subsamples was assumed for sample #16540.

Approx. 5 grams of sample #16540 was sent to each of the participating laboratories on March 23, 2016.

2.5 ANALYSES

The participants were requested to determine the content of Chromium VI on a leather sample, applying the analysis procedure that is routinely used in the laboratory, however without drying (or determination of volatile matter).

To get comparable results a detailed report form, on which the units were prescribed as well as the required standards and a letter of instructions were prepared and made available on the data entry portal www.kpmd.co.uk/sgs-iis/. The detailed report form was also made available for download on the iis website www.iisnl.com.

3 RESULTS

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

Directly after the deadline, a reminder was sent to those laboratories that had not reported test results at that moment. Shortly after the deadline, the available test results were screened for suspect data. A test result was called suspect in case the Huber Elimination Rule (a robust outlier test) found it to be an outlier. The laboratories that produced these suspect data were asked to check the reported test results (no reanalysis). Additional or corrected test results are used for data analysis and the original reported test results placed under 'Remarks' in the result tables in appendix 1. Test results that came in after the deadline were not taken into account in this screening for suspect data and thus these participants were not requested for checks.

A list of abbreviations used in the tables can be found in appendix 4.

3.1 STATISTICS

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 Organisation, Statistics and Evaluation' of April 2014 (iis-protocol, version 3.3).

For the statistical evaluation the *unrounded* (when available) figures were used instead of the rounded test results. Test results reported as '<...' or '>..." were in general 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. The statistical evaluation of the test results should be used with due care in case that a data set does not prove to have a normal distribution.

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

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

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

3.2 GRAPHICS

In order to visualise the data against the reproducibilities from literature, Gauss plots were made, using the sorted data for one determination (see appendix 1). On the Y-axis the reported 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. The Kernel Density Graph is a method for producing a smooth density approximation to a set of data that avoids some problems associated with histograms. Also a normal Gauss curve was projected over the Kernel Density Graph for reference.

3.3 Z-SCORES

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

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

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

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

|z| < 1 good

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

4 EVALUATION

In this interlaboratory study, no problems were encountered with the dispatch of samples. Seven participants reported results after the final reporting date and two other participants did not report any test results.

Finally, 145 participants did report 144 numerical results (one laboratory reported <3 mg/kg). Observed were 6 outlying test results, which is 4.2% of the numerical results. In proficiency studies, outlier percentages of 3% - 7.5% are quite normal.

4.1 EVALUATION PER SAMPLE

In this section, the results are discussed. All statistical results reported on the leather samples are summarised in appendix 1.

In ISO17075 is mentioned that the pH of the solution after extraction and filtering through a membrane filter shall be between 7.5 and 8.0. If not, the complete procedure shall be start again. Only two laboratories reported to have measured a pH outside the acceptable range. Both test results were significantly low and one of the test results was excluded from the statistical evaluation as it appeared to be an outlier.

#16540: The determination of Chromium VI at a concentration level of 4 mg/kg was problematic. Six statistical outliers were observed. The calculated reproducibility after rejection of the statistical outliers is not in agreement with ISO17075:2007. The large dispersion of the reported test results is (partly) caused by the differences in the pre-treatment of the sample. The laboratories that did use the sample as received without cutting/grinding, reported significantly lower test results than the laboratories that did cut or grind the sample before the determination of the chromium VI content, see also the discussion in chapter 6.

4.2 PERFORMANCE EVALUATION FOR THE GROUP OF LABORATORIES

A comparison has been made between the reproducibility as declared by the relevant reference test method and the reproducibility as found for the group of participating laboratories.

The number of significant test results, the average result, the calculated reproducibility (standard deviation*2.8) and the target reproducibility, derived from the official test method ISO17075:2007 are presented in the next table.

Parameter	unit	n	Average	2.8 * sd	R(target)
Chromium VI	mg/kg	138	3.97	3.23	2.06

table 3: performance overview for sample #16540

From the above table, it can be concluded, without further statistical calculations, that the participating laboratories have problems with the analysis of Chromium VI in leather, when compared to the target reproducibility requirement of the ISO17075 method.

4.3 EVALUATION OF GROUP RESULTS AGAINST LIMITS FOR CHROMIUM VI

As Chromium VI is carcinogenic, mutagenic and toxic for reproduction, the regulations within countries tend to adopt a zero-tolerance policy. In actual practise this will mean below the detection limit of the widely accepted test method ISO17075:2007. Examples of regulations can be found in table 4.

Chromium VI	Limit	Comment	
Germany: SG (Schadestoff gepruft) – label	< 3 mg/kg	As well for aging as non-aging	
EU: REGULATION No 301/2014 amending		Implementation: 01.05.2014	
Annex XVII to Regulation (EC) No	< 3 mg/kg	Implementation: 01-05-2014	
1907/2006 of the (REACH)		Reported only as dry-weight	

table 4: Regulation on Chromium VI

When the results of this interlaboratory study were compared to this limit, it may be noticed that not all participants would make identical decisions about the acceptability of the leather.

When using a limit of <3 mg/kg and applying it to the reported test results for sample #16540, the majority of the laboratories would not release this sample to the consumer market. However, 27 laboratories (=19%) reported a test result below the above mentioned limit 3 mg/kg and would have released the leather to the market.

NB: when the test results had been reported on "dry weight" according Regulation No 301/2014 the average chromium VI content of 3.97 would be higher!

5 COMPARISON WITH PREVIOUS INTERLABORATORY STUDIES

The observed variation in the test results for Chromium VI in the 2016 PT is in agreement in comparison with the variation as observed in the previous PTs, see below table.

Component	April 2016	February 2015	February 2014	Target
Chromium VI	29%	33%	19 – 31%	19%

table 5: development of the uncertainties over the years

6 DISCUSSION

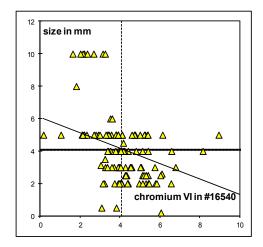
From the reported test methods it appeared that a large majority participants tested the leather samples according to the test method ISO17075:2007, a colorimetric test method, and five participants used §64 B LFGB 82.02-11. These two tests methods appear to be similar (both in literature searches as in the results of this proficiency test). Other used test methods are CPSD-AN-00044, DIN53314, GB/T22807 and ISO/DIS 17075-2:2015, a chromatographic test method.

The analytical details that were reported by the participants are summarized in appendix 2.

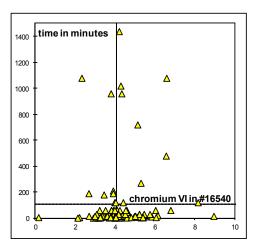
Sample pretreatment by cutting or grinding:

The samples were already cut to pieces before the homogenisation of the material.

A number of participants did cut the sample further; one participant used a milling procedure to powder the sample. The final particle size of the sample has a visible influence on the test results, see the graph. Cut/grinded samples are giving higher chromium VI test results than when tested without pre-treatment, see also the separate evaluations of the two sets of test results on page 13.



<u>Time between cutting/grinding and extraction:</u> Another factor of influence may be the time between the cutting/grinding and the actual extraction with the buffer solution. Chromium VI is not very stable and may oxidize easily to Chromium III. In the graph it is visible that no correlation is present between the measured Chromium VI content and the actual time between cutting/grinding and extraction of the sample. The stability of Chromium VI under the test circumstances obviously is not critical.

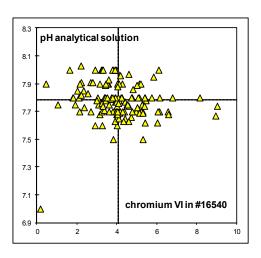


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Also the pH is an important factor in test method ISO17075:2007, as it states that the pH should be between 7.5 and 8.0. In the graph it is visible that no correlation is present between the pH of the analytical solution and the Chromium VI content of the sample.

Two laboratories reported to have measured a pH outside the acceptable range. Both test results were significantly low and one of the test results appeared to be a statistical outlier.

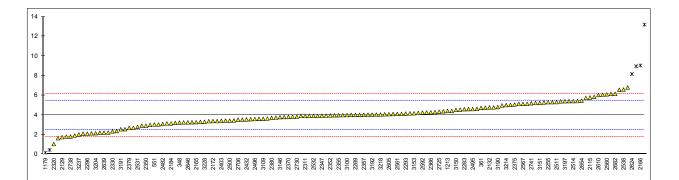


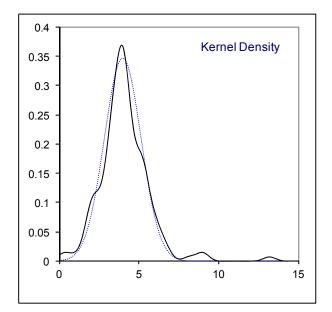
The other analytical details mentioned in appendix 2 also appeared to have no significant influence on the test result for this sample.

Determination of Chromium VI in sample #16540; results in mg/kg

lab	method	value	mark	z(targ)	remarks
110	ISO17075 ISO17075	6.784 5.26		3.82	
213 339	ISO17075 ISO17075Mod.	5.26 1.9	С	1.75 -2.81	first reported <2 5
348	ISO170751000.	3.217	C	-2.01	first reported <2.5
361	ISO17075	4.71		1.00	
551	ISO17075	3.0258		-1.28	
623	ISO17075	3.56		-0.56	
840	ISO17075	3.8		-0.23	
1179	EN71-3+A1	0.15365	R(0.05)	-5.18	
1213	ISO17075	4.4	С	0.58	first reported 11.183
2102 2115	ISO17075	 5.77		 2.44	
2115	ISO17075	2.190		-2.44	
2120	ISO17075	1.73		-3.04	
2131	ISO17075	3.185		-1.07	
2132	ISO17075	4.76		1.07	
2165	ISO17075	3.2572		-0.97	
2166	ISO17075	9.031	R(0.05)	6.87	
2172	ISO17075	3.369		-0.82	
2184 2201	ISO17075 ISO17075	3.137 4.20		-1.13 0.31	
2201	ISO17075	4.20 5.12		1.56	
2228	In house	2.2055		-2.40	
2232	ISO17075	2.0859		-2.56	
2238	ISO17075	4.104		0.18	
2246	ISO17075	4.725		1.02	
2247	ISO17075	4.96		1.34	
2255	ISO17075	5.29 6.5595		1.79	
2272 2273	ISO17075	6.5585 		3.51	
2283	ISO17075	4.58		0.83	
2289	ISO17075	4.0		0.04	
2290	ISO17075	4.61		0.87	
2293	ISO17075	4.129		0.22	
2295	ISO17075	5.4		1.94	
2296	In house	2.09 3.60		-2.55 -0.50	
2310 2311	ISO17075 ISO17075	3.00		-0.50	
2320	10011013	1.03		-3.99	
2330	ISO17075	2.3226		-2.24	
2347	ISO17075	3.9155		-0.07	
2350	ISO17075	2.9016		-1.45	
2352	ISO17075	3.94		-0.04	
2355 2357	ISO17075 ISO17075	3.967 4.01		0.00 0.05	
2358	ISO17075	3.5176		-0.62	
2363	ISO17075	4.02		0.02	
2365	ISO17075	3.97		0.00	
2366	ISO17075	4.2634		0.40	
2369	ISO17075	3.9		-0.10	
2370	ISO17075	3.79 5.06		-0.25	
2375 2379	ISO17075 ISO17075	5.06 2.6742		1.48 -1.76	
2379	ISO17075	3.6920		-0.38	
2385	ISO/DIS17075-2	4.25		0.38	
2389	ISO17075	5.21		1.68	
2390	ISO17075	3.42		-0.75	
2403	ISO17075	3.4136		-0.76	
2410	ISO17075	4.0 5.02		0.04	
2426 2432	ISO17075 ISO17075	5.02 3.5375		1.42 -0.59	
2432	ISO17075	3.03		-1.28	
2449	ISO17075	3.438		-0.72	
2459	ISO17075	5.8339		2.53	
2460	ISO17075	5.408		1.95	
2462	ISO17075	3.37		-0.82	
2482	ISO17075	3.07		-1.22	
2489 2495	ISO17075 ISO17075	4.0 4.59		0.04 0.84	
2495 2496	ISO17075	4.59 3.5791		-0.53	
2497	ISO17075	6.13		2.93	
2500	ISO17075	3.421		-0.75	
2501	ISO17075	3.1333		-1.14	
2504	ISO17075	5.1261		1.57	
2511 2514	ISO17075 ISO17075	5.3 5.4		1.81 1.94	
2014	10011010	J. T		1.54	

2522	ISO17075	3.9	С	-0.10	first reported 0.60	
2531	ISO17075	2.7790	-	-1.62		
	ISO17075					
2532	15017075	3.9		-0.10		
2538		6.58		3.54		
2543	ISO17075	8.95	R(0.05)	6.76		
2553	ISO17075	2.12	. ,	-2.51		
2560	ISO17075	6.093		2.88		
2561	ISO17075	4.10		0.18		
2563	ISO17075	3.24		-0.99		
2567	ISO17075	5.12		1.56		
2569	ISO17075	4.06		0.12		
2586	ISO17075	4.0865		0.16		
2590	ISO17075	4.4011		0.58		
2592	ISO17075	4.23		0.35		
2605	ISO17075	4.07		0.13		
2610	ISO17075	6.026		2.79		
2612	ISO17075	4.365		0.54		
2624	ISO17075	8.155	R(0.05)	5.68		
2629			14(0.00)	0.84		
	ISO17075	4.5888				
2637	ISO17075	2.9		-1.45		
2639	GB/T 22807	2.1995		-2.40		
2646	ISO17075	3.24		-0.99		
2654	ISO17075	5.45	С	2.01	first reported 12.76	
2655	In house	<3				
2656	ISO17075	2.9825		-1.34		
2662	ISO17075	3.9233		-0.06		
2664	ISO17075	1.7794		-2.98		
2668	ISO17075	3.72		-0.34		
2674	ISO17075	3.3604		-0.83		
2682	ISO17075	6.14		2.95		
2695	ISO17075			1.91		
		5.3757				
2702	ISO17075-2	4.16		0.26		
2705	ISO17075	13.19	R(0.01)	12.52		
2706	In house	3.51		-0.63		
2711	ISO17075-2	3.621		-0.47		
2713	ISO17075	3.2878		-0.93		
2716	ISO17075	0.435	R(0.05)	-4.80		
			R(0.05)			
2721	In house	3.96		-0.01		
2725	ISO17075	4.3258		0.48		
2730	ISO17075-2	3.8106		-0.22		
2738	In house	1.8		-2.95		
2741	ISO17075	5.19		1.66		
3100	ISO17075	3.98		0.01		
3109	In house	3.6		-0.50		
3116	In house	3.78		-0.26		
3146		3.77		-0.27		
	ISO17075 mod.					
3150	ISO17075	4.50		0.72		
3151	ISO17075	5.215		1.69		
3153	ISO17075	4.169		0.27		
3154	ISO17075	2.54		-1.94		
3160	ISO17075	6.05		2.82		
3172	ISO17075	5.2959		1.80		
3183		2.6852		-1.75		
	ISO17075					
3185	ISO17075	4.03		0.08		
3190	ISO17075	4.8		1.13		
3191	ISO17075	2.5363		-1.95		
3192	In house	4.0250		0.07	also reported ISO/DIS17075-2 resul	t: 3.895 mg/kg
3197	ISO17075	5.39		1.93		0 0
3200	ISO17075	4.53		0.76		
	13017073					
3204	10047075	2.135		-2.49		
3209	ISO17075	5.74		2.40		
3210	In house	4.28		0.42		
3214	ISO17075	5.0		1.40		
3216	ISO17075	2.3532		-2.20		
3218	ISO17075	4.03		0.08		
3220						
3220				-0.98		
3222	DIN53314	3.25		-0.98 1.07		
.3/28	DIN53314 ISO17075	3.25 4.761		1.07		
	DIN53314 ISO17075 ISO17075	3.25 4.761 3.30		1.07 -0.91		
3233	DIN53314 ISO17075 ISO17075 In house	3.25 4.761 3.30 1.6228		1.07 -0.91 -3.19		
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075	3.25 4.761 3.30 1.6228 2.01		1.07 -0.91 -3.19 -2.66		
3233	DIN53314 ISO17075 ISO17075 In house	3.25 4.761 3.30 1.6228		1.07 -0.91 -3.19		
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075	3.25 4.761 3.30 1.6228 2.01		1.07 -0.91 -3.19 -2.66	only after cutting/grinding:	tested as received:
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075	3.25 4.761 3.30 1.6228 2.01		1.07 -0.91 -3.19 -2.66	<u>only after cutting/grinding:</u> OK	tested as received: OK
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075 ISO17075 normality	3.25 4.761 3.30 1.6228 2.01 3.9 OK		1.07 -0.91 -3.19 -2.66	OK	OK
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075 ISO17075 normality n	3.25 4.761 3.30 1.6228 2.01 3.9 OK 138		1.07 -0.91 -3.19 -2.66	OK 106	OK 32
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075 ISO17075 normality n outliers	3.25 4.761 3.30 1.6228 2.01 3.9 OK 138 6		1.07 -0.91 -3.19 -2.66	OK 106 4	OK 32 1
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075 ISO17075 normality n outliers mean (n)	3.25 4.761 3.30 1.6228 2.01 3.9 OK 138 6 3.971		1.07 -0.91 -3.19 -2.66	OK 106 4 4.320	OK 32 1 2.763
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075 ISO17075 Normality n outliers mean (n) st.dev. (n)	3.25 4.761 3.30 1.6228 2.01 3.9 OK 138 6 3.971 1.1524		1.07 -0.91 -3.19 -2.66	OK 106 4 4.320 0.9541	OK 32 1 2.763 1.0735
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075 ISO17075 ISO17075 normality n outliers mean (n) st.dev. (n) R(calc.)	3.25 4.761 3.30 1.6228 2.01 3.9 OK 138 6 3.971 1.1524 3.227		1.07 -0.91 -3.19 -2.66	OK 106 4 4.320 0.9541 2.671	OK 32 1 2.763 1.0735 3.006
3233 3237	DIN53314 ISO17075 ISO17075 In house ISO17075 ISO17075 Normality n outliers mean (n) st.dev. (n)	3.25 4.761 3.30 1.6228 2.01 3.9 OK 138 6 3.971 1.1524		1.07 -0.91 -3.19 -2.66	OK 106 4 4.320 0.9541	OK 32 1 2.763 1.0735





Summary of reported analytical details

Lab Analysis method	Pretreatment	article size before analysis	time between grinding and extraction
110 RSTS-Chem-104-1	Cut	3 x 3 mm	< 1 hr
213 ISO 17075	Cut	5 x 5 mm	
339 UV absorbance (540 nm)	Used as received		n/a
348 ISO 17075	Cut	2 x 2 mm	<1 min
361 ISO 17075:2007	Cut	5 x 5 mm	~ 5 min
551 ISO 17075	Cut		
623 ISO 17075	Cut	5 x 5 mm	30 min
840 ISO 17075	Cut	0.5 cm	1 hour
1179 EN 71-3+A1	Grinded	0.5 mm	5 min
1213 ISO 17075	Cut	< 4mm	2 h
2102			
2115 ISO17075	Cut	2 mm	10 min
2128 ISO17075	Used as received	ca. 5 mm	n/a
2129 ISO17075	Used as received		4
2131 ISO 17075	Cut	F F	1 minute
2132 ISO 17075 2165 ISO 17075:2007	Cut Cut	5 x 5 mm	10 min 3 min
2166 ISO17075		3 x 3 mm	5 11111
2172 ISO 17075	Used as received Cut	5 x 5 mm	10 min
2184 ISO 17075	Cut	2 x 2 mm	immediately
2201 iso17075	Cut	4 x 4 mm	in 24 hours
2213 ISO 17075	Cut	2 mm to 3 mm	5 to 10 minutes
2228 CPSD-AN-00044-MTHD	Used as received	5 x 5 mm	5 min
2232 ISO 17075	Used as received	5 x 5 mm	n/a
2238 official method	Used as received	5 x 5 mm	5 min
2246 ISO 17075	Cut	5 x 5 mm	10 min
2247 ISO 17075	Cut	2 x 2 mm	10 to 15
2255 ISO 17075	Cut	2 x 2 mm	4.5 hours
2272	Cut	2 x 2 mm	<8 hours
2273			
2283 ISO 17075:2008	Cut	0.3*0.3 cm	60 min
2289 ISO 17075:2007	Cut	2 x 2 mm	immediately
2290 ISO17075	Cut		
2293 ISO17075	Cut	4 x 4 mm	15 min
2295 ISO 17075	Grinded	2-3	5 min
2296			
2310 ISO 17075	Used as received	(EXE) 12 mm	20 min
2311 ISO 17075 2320 RSTS-CHEM-104-1	Cut Used as received	(5X5)±2 mm 5 x 5 mm	30 min
2320 ISO 17075	Cut	5 x 5 mm	n/a 1080 min
2347 ISO17075	Cut	3 x 3 mm	60 min
2350 ISO 17075	Cut	5 x 5 mm	immediately
2352 ISO 17075:2007	Cut	4 x 4 mm	30 min
2355 ISO17075	Cut	3 x 3 mm	30 min
2357	Used as received		
2358 ISO 17075	Cut	4 x 4 mm	15 min
2363 ISO 17075:2007	Cut	3 x 3 mm	15 min
2365 ISO17075:2007	Cut	3 x 3 mm	less than 2h
2366 ISO 17075	Cut	3 x 3 mm	immediately
2369	Cut	3 x 3 mm	3.5h
2370 ISO 17075	Cut	5 x 5 mm	16 hours
2375 ISO 17075-2007	Cut	3 x 3 mm	
2379 ISO 17075:2007	Used as received	1 cm X 1 cm	around 190 min
2380 ISO 17075:2007	Cut	3 x 3 mm	2 min
2385 Draft ISO 17075-2	Cut	2 - 3 mm	10 min
2389 ISO 17075	Cut	5 x 5 mm	30 min
2390 ISO 17075	Cut	5 x 5 mm 4mm	15 min 10 min
2403 ISO 17075:2007	Cut	4mm 4 x 4 mm	10 min
2410 ISO 17075 2426 ISO17075	Cut Cut	4 x 4 mm 3 x 3 mm	10 min 15 min
2420 15017075 2432	Used as received	5 & 5 11111	10 (1)(1)
2432 2442 ISO 17075:2007	Cut	3.13 mm	5 min
2442 130 17073.2007	Cut	5 x 5 mm	180 min
2459	Cut	2 mm ²	10 min
2460 ISO 17075:2007	Cut	2 x 2 mm	15 min
2462 ISO 17075	Cut	4 x 4 mm	15min
2482 BVL B 82.02-11	Cut	< 0,5 mm	~ 30 min
2489 ISO 17075	Cut	2 x 2 mm	10 min
2495 ISO 17075:2007	Cut	5 x 5 mm	45 min
2496 ISO 17075	Cut	3mm	15 min
2497 ISO 17075	Cut	5mm	20 min
2500 ISO17075	Cut	5 x 5 mm	20 min
2501 ISO17075:2007	Used as received	1cm x 1cm	n/a
2504 ISO17075	Cut	2*2 mm	720 min
2511 ISO 17075	Cut	2mm to 3 mm	few minutes
2514 ISO17075	Cut	4 x 4 mm	3min - 5 min

Lab Analysis method	Pretreatment	article size before analysis	time between grinding and extraction
2522 ISO 17075	Cut	5 mm	20 min
2531 ISO 17075	Used as received	0,5 cm	n/a
2532 ISO17075-2008	Cut	2 mm	10 min and 3 hrs shaking
2538 B82.02-11	Cut	3 x 5 mm	approx. 18 h
2543 ISO 17075	Grinded	70% powder and 30% ar	15 min
2553 ISO 17075	Cut	5 x 5 mm	<1 min
2560 ISO 17075-1	Cut	3. 2mmX2mm	n/a
2561 ISO 17075	Cut	5X5mm	1 hour
2563 ISO 17075 2567 ISO 17075	Cut Cut	ca. 3 x 4 mm 4 x 4 mm	5 min
2569 ISO 17075	Cut	4 x 4 mm 4mm	 10 min
2586 ISO 17075	Cut	2 mm	10 mm
2590 ISO 17075	Cut	2 x 2 mm	15 min
2592 ISO 17075	Cut	< 4 mm	1 hour
2605 ISO17075	Cut	2mm	10min
2610 ISO 17075	Cut	2-3 x 2-3 mm	60 min
2612 ISO17075	Cut	< 2x2 mm	20 min
2624 ISO 17075	Grinded	<4 mm	2 hours
2629 ISO 17075	Cut		2
2637 ISO 17075	Used as received		,
2639 GB/T 22807-2008	Used as received	1cm x 1cm	n/a
2646 § 64 82.02-11 (Stand 10/2008)	Used as received	2 mm	20 min
2654 ISO 17075 2655 In house method	Grinded Grinded	2 mm <2 mm	30 min 200 min
2656 ISO17075	Used as received	<2 mm 5 x 5 mm	15 min
2662 ISO 17075	Used as received	$4 \text{ mm} \pm 0.5 \text{ mm}$	n/a
2664 ISO 17075:2007	Used as received		· · · •
2668 ISO 17075	Cut	2 x 2 mm	30 min
2674 ISO 17075	Cut	3 x 3 mm	15 min
2682	Grinded	N/A	20 min
2695 ISO 17075	Cut	2x10 mm	10 min
2702 17075-2	Cut	4-5 mm	15
2705 ISO 17075	Grinded	<5mm	~45
2706 In house method	Cut	ca. 0.3x1 cm	max. 1 h
2711 ISO/DIS 17075-2	Used as received	0.5.0000.5.000	n/a 5 min
2713 ISO 17075 2716 ISO 17075	Cut Used as received	0.5 cmX0.5 cm	5 min
2716 ISO 17075 2721 In house method	Used as received Cut	2 x 2 mm	immediately
2725 ISO 17075	Cut	2-3mm	960 min
2730 ISO/DIS 17075-2	Cut	0.5 mm x 0.5 mm	<60 min
2738 in house method	Used as received	7-10mm * 7-10mm	
2741 ISO 17075	Cut	2-3mm	10 min
3100 ISO 17075	Cut	4 x 4 mm	1 hours
3109 In house method	Cut	5 mm x 7 mm	15 min
3116 In house method	Cut	5 x 5 mm	15 min
3146 ISO 17075 modified	Cut	3 x 5 mm	5 min
3150 ISO 17075	Cut	3 x 3 mm	30 min
3151 ISO 17075	Cut	4 x 4 mm	30 min
3153 ISO 17075:2007 3154 ISO 17075	Cut Used as received	4 x 4 mm	30 min
3160 ISO 17075	Cut	0,2 x 0,2 mm	5 min
3172 ISO 17075	Cut	2-3mm	
3183 §64 LFGB 82.02-11	Cut	0,5 x 0,5 cm	15 min
3185 ISO17075:2007	Cut	4 x 4 mm	10 min
3190 ISO 17075	Cut	4 x 4 mm	5 min
3191 ISO17075	Used as received	not measured	n/a
3192 §64 LFGB 82.02-11	Cut	3 x 3 mm	120 min
3197 ISO 17075	Used as received	5 mm	5 min
3200 ISO 17075	Cut	3 x 3 mm	60 min
3204 §64B82.02.11	Used as received	1 x 1 cm	20 min
3209 ISO17075	Cut	3 x 3 mm	30 min
3210 In house method 3214 ISO 17075	Cut Cut	2*3mm 0.5 cm x 0.5 cm	1020 min 15 min
3214 ISO 17075 3216 ISO 17075:2007	Used as received	(10x10)mm	
3218 ISO 17075	Cut	4 x 4 mm	5 min
3220 DIN 53314	Cut	1cm square	5 min
3222 ISO 17075	Used as received		
3228 ISO 17075	Used as received		
3233 In house method	Used as received	1 cm x 1 cm	
3237 ISO 17075	Used as received	1 cm x 1 cm	
3248 ISO 17075	Used as received	5 x 5 mm	n/a

Summary of reported analytical details, continued

Lab	extraction solution degassed	analytical solution degassed	pH extraction solution	pH analytical solution	extraction time and temperature
110	not degassed	not degassed	8.01	7.8	3hr @ 24C
	Argon	Argon		7,5 - 8,0	3 hrs at 18~28 °C
	not degassed	not degassed		7,5 - 8,0	180 min RT (20°C)
	Nitrogen	Nitrogen	8.0 ± 0.05	close to 8.0	180 min
	Nitrogen Nitrogen	not degassed Nitrogen	8.0	7.66	180 min / 21,2°C 180 min / 22 °C
	Nitrogen	Nitrogen	7.8	7.9	180 min at 25 C
	Argon	Argon	8	8	
1179	not degassed	not degassed	< 2	+/- 7	60 min / 50°
	Nitrogen	Nitrogen	8.0	7.65	180 min, 30°C
2102		 N 1944			100 min 05%0
	Nitrogen Nitrogen	Nitrogen	8.0 8,00	8,03	180 min 25°C 180 min; RT 21,0 °C
	Argon	Nitrogen Argon	0,00	0,05	100 mm, KT 21,0 C
	Nitrogen	Nitrogen		7.5-8.0	180 min, RT
	Nitrogen	Nitrogen	7.8	7.8	180 min & RT(25°C)
	Argon	Argon	8.0	7.6	180 min, 25.1°C
	Argon	Argon	8,00	7,74	180 min. 20 °C
	Argon O2-free)	Argon (O2-free)	8.0	7.8	180 min , 22 °C
	Nitrogen Nitrogen	Nitrogen not degassed	7.5 8.0	7.9 7.8	180 min, 23 deg C 23°C at 180 min
	Argon O2-free)	Argon (O2-free)	8	7.8	180 min & temp is 23
	Argon O2-free)	not degassed	7.99	7.91	180 min and 26°C
	Argon	Argon (O2-free)	8.0	7.8	180 min and 24°C
2238	Nitrogen	Nitrogen	8.0	7.78	180 min RT
	Nitrogen	Nitrogen	7.8	7.8	180 min @ 25°C
	Argon	Argon	8.00	7.70	180 and 24
	Nitrogen Nitrogen	Nitrogen	8.0	7.7 7.7	3 hrs ; RT
2272	0	Nitrogen	8.0	1.1	3hours 25°C
	Argon	not degassed	8.0	7.63	180 min and 22°C
2289	Argon O2-free)	Argon (O2-free)	7.7	7.7	180 min 20°C
2290	o ,	0 ()			
	Nitrogen	Nitrogen	8.01	7.69	3 hrs +/- 5 min at RT
	Nitrogen	Nitrogen	8.05	7.8	180 min 23.6
2296			Q 0±0 1	7.5 -8.0	$190 \text{ min and } 25 \pm 190$
	Argon Argon	Argon	8.0±0.1 8.0	7.5-6.0 7.8	180 min and 25±1°C 3 Hour
	Nitrogen	not degassed	7.5-8.0	7.5-8.0	180 min 28°C
	Nitrogen	Nitrogen	7.998	7.851	180 min and 25-30 °C
	Nitrogen	not degassed	8.01	7.77	180 min at 23°C
	Nitrogen	Nitrogen	8.0	8.0	3 hours , 20 °C
	Nitrogen	Nitrogen	8.01	7.72	3 hours 25°C
2355 2357	Argon O2-free)	Argon (O2-free)	8.0	8.0	180 min and 25°C
	Nitrogen	Nitrogen	8.0	7.9	180 min, 22 °C
	Nitrogen	Nitrogen	8.0	7.9	3 hours and 22 °C
	Nitrogen	Nitrogen	8.01	7.77	3h, 23°C
	Nitrogen	not degassed	8.0	7,9	180 min and 23°C
	Nitrogen	Nitrogen	8.0	8.0	3h,23°C
	Argon	Argon	7.95	7.70	3 hours and 24 °C
2375 2379	Nitrogen	Nitrogen	8.0 8.00	7.8 7.91	180 min - 22 C 180 min , 24.1 °C
2380	Argon	not degassed	8.0	7.79	180+/-5 min at 22 °C
	Nitrogen	Nitrogen	8,0	7,8	180 min; 21 °C
2389	Nitrogen	Nitrogen	8.0	7.7	180 min , 25 °C
	Nitrogen	not degassed	8.01	7.78	180 min at 20.4 °C
	Nitrogen	Nitrogen	8.02	7.89	3hours, RT
	Nitrogen	not degassed	7.99	7.74	180 min
2426 2432	Nitrogen	not degassed	8.01	7.73	180m / 25.2°C
	Argon O2-free)	Argon (O2-free)	8.01	7.8	180 min, 25°C
	Nitrogen	Nitrogen	7.67	7.9	180 min
2459	Argon	Argon	8.0	7.95	3 hours at 25 °C
2460	Argon O2-free)	Argon (O2-free)	7.97	7.62	180 min, 21°C
	Argon	Argon	8.0	7.8	180 min/ 23°C
	Argon O2-free)	Argon (O2-free)	8,0 8	7,5 - 8,0 7 6	3 hrs, 20 °C 3 hrs/ 22°C
	Nitrogen Nitrogen	Nitrogen Nitrogen	8 8.04	7.6 7.74	3 hrs/ 22°C 3h, RT (22°C)
	Argon O2-free)	Argon (O2-free)	8.04 8.01	7.93	3h 2 min/23°C
	Nitrogen	Nitrogen	8.0	7.7	180 min / 23°C
	Argon O2-free)	Argon (O2-free)	8.0	7.8	25 °C for 3 hrs ¡À 5 min
	Argon O2-free)	Argon (O2-free)	8,01	7.68	30 min, 23°C
	Argon	Argon	8.01	7.69	180 min , RT
2511	Argon O2-free)	Argon (O2-free)	8.1	7.5	3 hours at 21 C

254 Nitrogen Provide Provide <thprovide< th=""> Provide <thpro< th=""><th>Lab</th><th>extraction solution degassed</th><th>analytical solution degassed</th><th>pH extraction solution</th><th>pH analytical solution</th><th>extraction time and temperature</th></thpro<></thprovide<>	Lab	extraction solution degassed	analytical solution degassed	pH extraction solution	pH analytical solution	extraction time and temperature
2522 not degassed 9.3 8.0 180 min and 25 °C 2531 Nitrogen Nitrogen 8.0 7.83 180 min and 25 °C 2532 Nitrogen Nitrogen 8.0 7.70 ~ 7.66 180 min and 25 °C 2533 Nitrogen Nitrogen 8.0 7.70 ~ 7.66 180 min and 25 °C 2533 Nitrogen Nitrogen 8.0 7.7 180 min and 24 °C 2534 Nitrogen 8.00 7.7 180 min and 24 °C 2534 Nitrogen 8.01 7.9 180 min 25 °C 2536 Argon O2-free) Argon (02-free) 8.07 7.75 180 min and 71 2580 Nitrogen Nitrogen 7.8 7.7 180 min and 72 2581 Argon O2-free) Argon (02-free) 8.07 7.77 180 min and 72 2582 Nitrogen Nitrogen 7.8 7.77 180 min and 72 2584 not degassed 6.00 7.62 31 baczs 7.2 2587 Argon <td>2514</td> <td></td> <td></td> <td></td> <td></td> <td>•</td>	2514					•
2531 Nitrogen not degassed 8.00 7.81 39.23°C 2532 Nitrogen not degassed 8 7.70 7.66 180 min at 25°C 2538 Nitrogen not degassed 8 7.70 7.66 180 min at 25°C 2538 Nitrogen Atgon 8.0 7.7 180 min at 25°C 2534 Nitrogen Atgon 8.0 7.7 3 hours at RT 2561 Nitrogen Nitrogen 8.0 7.7 3 hours at RT 2566 Argon C2-free) Argon (C2-free) 8.07 7.75 180 min at 25°C 2580 Argon C2-free) Argon (C2-free) 8.07 7.76 3 hours RT 2580 Argon C2-free) Argon (C2-free) 8.00 7.6 3 2511 Nitrogen not degassed 6.0 7.7 3 hours RT 25°C 2512 Nitrogen Argon C2-free) 8.00 7.8 3 Hours at 25°C 2521 Argon C2-free) Argon C2-free) <t< td=""><td></td><td>0</td><td>5</td><td></td><td></td><td></td></t<>		0	5			
2532 Nitrogen Nitrogen 8.0 7.63 180 min and 25° C 2538 Nitrogen Nitrogen 8.06 7.70 - 7.66 180 min and 25° C 2533 Argon Argon 8.06 7.67 180 min and 24° C 2530 Argon 0.0 7.0 3.00 min and 24° C 2563 Argon 02-free A.gon 102-free 8.0 7.9 3.00 min 25° C 2564 Argon 02-free Argon 102-free 8.0 7.8 180 min 24° C 2568 Argon 02-free Argon (02-free) 8.07 7.76 180 min and RT 2580 Argon 02-free Argon (02-free) 8.07 7.76 3 hours RT 26 2580 Argon 02-free) Argon (02-free) 8.00 7.76 3 hours RT 26 2581 Argon 02-free) Argon 02-free 8.01 7.78 3 hours RT 26 2610 Argon 02-free Argon 02-free 8.00 7.72 180 min and 27 2628 Argon 02-free Argon<						
2538 Nitrogen not degassed 8 7.70 160 min / 28°C 2533 Nitrogen Argon 8.0 7.7 180 min / 28°C 2533 Nitrogen Nitrogen 8.0 7.7 180 min / 28°C 2530 Argon C2-freel Argon (C2-freel 8.01 7.9 180 at 26°C 2534 Argon C2-freel Argon (C2-freel 8.01 7.9 180 min 23°C 2586 Argon C2-freel Argon (C2-freel 8.07 7.77 180 min 23°C 2580 Nitrogen not degassed 8.0 7.65 31 min 23°C 2580 Nitrogen not degassed 8.0 7.62 31 hours RT 2500 Nitrogen not degassed 8.0 7.62 31 hours RT 2531 not degassed 8.0 7.62 31 hours RT 2.02 °C 2532 Nitrogen Nitrogen 7.9 7.7 3 hours RT 2.02 °C 2533 Argon O2-freel Argon 7.68 180 min 2.12 °C		U U	-			
2543 Nitrogen Nitrogen 8.06 7.67 180 min and 24 °C 2550 Nitrogen Nitrogen 8 8 18045 min and 24 °C 2560 Nitrogen Nitrogen 8.0 7.7 180 min and 24 °C 2563 Argon O2-free) Argon O2-free) 8.0 7.7 3 hours at RT 2563 Argon O2-free) Argon C2-free) 8.0 7.7 180 min ad 24 °C 2580 Argon O2-free) Argon C2-free) 8.0 7.6 180 min ad 27 °C 2580 Argon O2-free) Argon C2-free) 8.00 7.6 3 2580 Argon O2-free) Argon C2-free) 8.00 7.6 3 2511 Nitrogen Nitrogen 7.8 7.6 3 hours RT 2624 Argon Argon C2-free) 8.00 7.62 3 hours RT 2625 Argon Argon C2-free) 8.00 7.52 52 180 min ad 27 °C 2636 Argon C2-free) Argon C2-free)						
2553 Argon Argon 8.0 7.7 180 min af 24 °C 2560 Nitrogen Nitrogen 8.01 7.9 180 at 25°C 2561 Nitrogen 8.01 7.9 180 at 25°C 2563 Argon O2-free) Argon (O2-free) 8.0 7.9 - 2564 Mirogen Argon (O2-free) 8.0 7.9 180 min 25°C 2568 Nitrogen Argon (O2-free) 8.07 7.5 180 min and RT 2560 Nitrogen Argon (O2-free) 8.0 7.7 180 min and RT 2560 Nitrogen Nitrogen 7.9 7.7 3 hours RT 20-26 °C 2561 Argon Argon 8.04 7.8 3 hours RT 20-26 °C 2563 Argon Argon 8.04 7.8 3 hours RT 20-26 °C 2563 Argon Argon 8.04 7.8 3 hours RT 20-26 °C 2563 Argon O2-free) Argon 8.04 7.7 3 hours RT 20-26 °C 2563 <t< td=""><td></td><td>0</td><td></td><td></td><td></td><td></td></t<>		0				
2560 Nitrogen Nitrogen 8 8 1005 min 225°C 2561 Nitrogen Argon (02-free) Argon (02-free) 8.0 7.9 2568 Argon (02-free) Argon (02-free) 8.0 7.9 2569 Mitrogen Nitrogen 8.0 7.9 2569 Argon (02-free) 8.07 7.65 1.80 min 24°C 2560 Argon (02-free) 8.07 7.76 3.60 min 7.7 2561 Nitrogen not degassed 8.00 7.62 3.62 z.8 °C 2520 Argon 0 Argon (2-free) 8.06 7.8 3.60 min 8.72 2.8 °C 2524 and passed 8.0 7.8 3.60 min 8.72 2.3 °C 2.62 argon 2539 Argon 0 Argon 1.62 4.68 0.6 7.8 3.60 min 8.72 2.3 °C 2.65 Artoga 2546 Nitrogen 8.03 7.76 1.80 min 8.7 2.3 °C 2.65 Artoga 2558 Nitrogen 8.03 7.76 1.80 min 1.8 °C 2.65 Artoga		0				
2561 Nitrogen Nitrogen 8.01 7.9 180 algo 'C 2563 Argon O2-free) Argon (02-free) 8.0 7.7 3 hours at RT 2564 Argon O2-free) Argon (02-free) 8.07 7.65 180 min , 24°C 2586 Nitrogen Nitrogen 8.07 7.7 180 min and RT 2585 Nitrogen Nitrogen 7.8 7.8 180 min and RT 2585 Nitrogen Nitrogen 7.9 7.7 3 hours RT s 2612 Nitrogen Nitrogen 8.04 7.97 3 hours RT s 2624 not degassed 8.06 7.8 3 hours RT s 263 2637 Argon Argon (02-free) 8.06 7.8 180 min.72 2.3°C 2648 not degassed 8.06 7.76 180 min.71 2.6°C 2658 Argon 02-free) Argon (02-free) 8.00 7.76 180 min.71 2.6°C 2658 Nitrogen		•	-			
2563 Argon (02-free) Argon (02-free) R (02-free) <thr (02-free)<="" th=""> R (02-free)</thr>		0	Nitrogen			
2567 Arigon Arigon 8.0 7.9 2569 Mitrogen Nitrogen 8 (furffer) 7.8 180 min .24°C 2580 Argon (02-free) Argon (02-free) 8.07 7.77 180 min .81 2580 Argon (02-free) 8.07 7.76 3h 180 min .81 2580 Argon (02-free) 8.0 7.68 180 min .81 1 2610 Nitrogen not degassed 8.0 7.76 3h hours R1s 28 2611 Nitrogen not degassed 8.0 7.8 3 hours R1s 28 2629 Argon Argon (02-free) 8.06 7.8 3 hours R1T 28 2630 Argon (02-free) 8.06 7.8 180 min .02 arC 23 2644 Argon (02-free) 8.00 7.52 7.52 180 min .28°C 28 2655 Argon (02-free) 8.00 7.78 180 min .18 C1 (2°C) 266 2656 Nitrogen 8.00 7.7	2561	Nitrogen	Nitrogen	8.01	7.9	180 at 25°C
2560 Nitrogen Nitrogen 8 (Buffer) 7.8 180 min 23 °C 2580 Argon (02-free) Argon (02-free) 8.07 7.77 180 min and RT 2580 Nitrogen not degassed 8.00 7.62 3h 7.2 2610 Argon not degassed 8.0 7.62 3h 7.2 3h usus RT 20.2 °C 2611 Argon not degassed 8.0 7.6 3hours RT 20.2 °C 2634 not degassed 8.0 7.6 3hours RT 20.2 °C 2634 Argon Argon 8.0 7.6 3hours RT 20.2 °C 2634 Argon O2-free) Argon (02-free) 8.06 7.8 180 min 21.6 °C 2654 Nitrogen Nitrogen 8.0 7.78 180 min 21.6 °C 2656 Nitrogen Nitrogen 8.0 7.8 180 min 21 °C 2656 Nitrogen Nitrogen 8.0 7.8 180 min 21 °C 2656 Nitrogen Nitrogen 8.0 7.7 180 mi	2563	Argon O2-free)	Argon (O2-free)	8,0	7,7	3 hours at RT
2586 Argon (02-free) Argon (02-free) 8.07 7.77 180 min and RT 2590 Argon (02-free) Nirogen 7.87 180 min and RT 2590 Argon (02-free) Nirogen 7.86 7.8 180 min and RT 2505 Nirogen not degassed 8.00 7.62 3h, 22.8 °C 2610 Nirogen 7.99 7.7 3 hours RT 20-26 °C 2637 2624 Argon Argon 8.04 7.97 3h at 25C 7C 2637 Argon Argon 8.04 7.97 3h at 25C 7C 2636 Argon (2-free) Argon (2-free) 8.00 7.8 180 min, RT 2636 Nirogen 8.00 7.76 180 min at 8T (20°C) 2656 2656 Nirogen 8.00 7.77 7.8 180 min at 8T (20°C) 2656 Nirogen 8.00 7.7 7.8 180 min at 21°C 2656 Nirogen 8.00 7.7 7.8 180 min at 7C	2567	Argon	Argon	8.0	7.9	
2580 Arigon (Q2-free) Arigon (Q2-free) 8.07 7.77 180 min and RT 2592 Nitrogen not degassed 8.0 7.6 3h 2605 Nitrogen not degassed 8.0 7.62 3h, 22.8 °C 2611 Argon not degassed 8.0 7.62 3h bours RT 2624 not degassed 8.0 7.8 3hours RT 20.2 °C 2624 not degassed 8.00 7.61 3hours RT 20.2 °C 2637 Argon Argon 8.0 7.8 180 min. ² 2.3 °C 2646 not degassed 8.03 7.76 180 min. ² 1.8 °C 20.2 °C 2656 Mitrogen Nitrogen 8.00 7.78 180 min. ² 1.8 °C 2656 Nitrogen Nitrogen 8.00 7.7 7.8 180 min. 7.7 2660 Nitrogen Nitrogen 8.0 7.7 180 min. 8.0 7.7 2661 Argon (O2-free) Argon (O2-free) 8.00 </td <td>2569</td> <td>Nitrogen</td> <td>Nitrogen</td> <td>8 (Buffer)</td> <td>7.8</td> <td>180 min , 24°C</td>	2569	Nitrogen	Nitrogen	8 (Buffer)	7.8	180 min , 24°C
2590 Arigon (Q2-free) 7.8 7.7 180 min, RT 2592 Nitrogen not degassed 8.0 7.76 3h 2605 Nitrogen not degassed 8.0 7.76 3h 2.28 7.22 2610 Argon not degassed 8.00 7.62 3h 3h 3h 7.8 3h 7.8 3h 7.8 3h 7.8 3h 7.8 180 min, 2.2 7.2 7.2 7.2 7.2 7.8 180 min, 2.2 7.2 7.2 7.2 7.8 180 min, 2.1 7.7 2.66 Nitrogen Nitrogen 8.00 7.7 7.8 180 min, 2.1 7.7 2.56 Argon 0.2 7.6 7.8 180 min, 2.1 7.7 2.56 Argon 0.2 7.7 180 M 3h 3h 3h 3h 3h 3h	2586	Argon O2-free)	Argon (O2-free)	8,07	7,65	180 min 23 °C
2525 Nitrogen Nitrogen 7.8 7.8 18 2605 Nitrogen not degassed 8.00 7.76 3 hours RT 2.2.8 °C 2612 Nitrogen not degassed 8.00 7.8 3 hours RT 2.2.8 °C 2624 Antogen Argon 8.04 7.97 3 hat 25C 2637 Argon Argon 8.04 7.97 3 hat 25C 2638 Argon O2-free) Argon (O2-free) 8.06 7.82 180 min, RT 2646 not degassed 8.03 7.76 180 min, RT 22.3 °C 2646 Nitrogen Argon (O2-free) 8.00 7.78 180 min, RT 22.3 °C 2655 Nitrogen Nitrogen 8.00 7.78 180 min, 26°C 266 Nitrogen 8.00 7.78 180 min, 26°C 2666 Nitrogen Nitrogen 8.00 7.74 180 min, 26°C 2662 2664 Nitrogen Nitrogen 8.00 7.74 180 min 21°C 2664		-	2 , ,	8.07	7.77	180 min and RT
2605 Nitrogen not degassed 8.0 7.76 3h 2610 Argon not degassed 8.00 7.62 3h, 22.8 °C 2612 Nitrogen Nitrogen 7.9 7.7 3hours RT 20.2 °C 2624 Argon Argon 8.04 7.97 3h al 25 °C 2637 Argon Argon 8.06 7.82 180 min.72 0.2 °C 2638 Argon O.766 180 min.72 0.2 °C 270 2646 not degassed 8.00 7.76 180 min.2 °C 2655 Argon O2-free) Argon (O2-free) 8.00 7.78 180 min.2 °C 2656 Nitrogen Nitrogen 8.00 7.8 180 min.2 °C 266 2660 Nitrogen Nitrogen 8.00 7.7 7.8 180 min.2 °C 262 2661 Argon O2-free) Argon (O2-free) 8.00 7.4 180 min.2 °C 270 2662 Nitrogen Nitrogen 8.00 7.4 180 min.2 °C			3 ()		7.8	180 min . RT
2610 Argon not degassed 8.00 7.62 31, 22, 8°C 2612 Nitrogen Nitrogen 7,9 7.7 31 bours RT 20-28 °C 2624 Argon Argon 8.04 7.97 31 a125C 2633 Argon Q-2ree Argon (2-free) 8.06 7.82 180 min,272.23 °C 2646 hord begassed 8.03 7.76 180 min,21 °C 2655 Nitrogen 8.00 7.52,752 180 min, and control temp. 2656 Nitrogen 8.00 7.84 180 min, 26°C 2656 Nitrogen 8.00 7.8 180 min, 26°C 2664 Nitrogen 8.00 7.7 180 min at 21°C 2664 Nitrogen 8.00 7.7 180 min at 21°C 2702 Nitrogen 8.00 7.7 180 min at 21°C 2704 Argon O2-free) 8.00 7.7 180 min at 21°C 2705 Argon O2-free) Nitrogen 8.00 7.7 180 min at 23°C 27		-	U U			-
2612 Nitrogen 7.9 7.7 3 hours RTs 2624 Argon Argon 8.04 7.8 3 hours RTs 26.25 2629 Argon Argon 8.04 7.97 3h at 25C 25C 2637 Argon 0.21 8.06 7.62 180 min.F12.25 25C 2646 not degassed not degassed 8.03 7.76 180 min.RT 26.25 2656 Argon (02-free) 8.00 7.82 180 min. control temp. 266 2660 Nitrogen 8.0 7.8 180 min. control temp. 266 2664 Nitrogen 8.0 7.7 7.8 3 hrs and RT 2674 Argon O2-free) Argon (02-free) 8.00 7.74 180 min at 21°C 2685 Argon O2-free) Argon (02-free) 8.00 7.74 180 amin 21°C 2682 Nitrogen 8.00 7.74 180 amin 21°C 286 2705 Argon O2-free) Argon (02-free) 8.00			0			
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2637 Argon Argon 8 7.6 3 Hours 2639 Argon O2-free) Argon (02-free) 8.06 7.76 180 min-22.3°C 2646 Nitrogen Nitrogen 8 7.76 180 min-22.3°C 2655 Nitrogen Argon (02-free) 8.00 7.52 7.52 180 min. no control temp. 2656 Nitrogen 8.0 7.8 180 min. ACT (20°C) 2664 Nitrogen 8.0 7.8 180 min. ACT (20°C) 2664 Nitrogen 8.00 7.7 7.8 31 ms and RT 2674 Argon O2-free) 8.00 7.7 180 min at 21°C 2689 Nitrogen 8.00 7.7 180 min 23°C 2705 Argon O2-free) Argon (02-free) 8.00 7.8 180 min 23°C 2705 Argon O2-free) Argon (02-free) 8.00 7.8 180 min 23°C 2711 Nitrogen Nitrogen 8.0 7.7 180 min 23°C 2713 Argon O2-free)						
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2646 nof degassed not degassed 8.03 7.76 180 min, RT 2655 Arigon 02-free) Argon (02-free) 8.00 7.52, 7.52 180 min, 24.8°C 2656 Nitrogen not degassed 7.88 7.8 180 min, 24.8°C 2666 Nitrogen 8.0 7.8 180 min, 28°C 2864 Nitrogen 8.0 7.8 180 min at RT (20°C) 2864 Nitrogen 8.00 7.71 3 hars and RT 2864 Nitrogen 8.03 7.74 180 min at 21°C 2868 Nitrogen 8.03 7.74 180 min at 21°C 2868 Nitrogen 8.00 7.74 180 min at 21°C 2700 Argon 02-free) Argon (22-free) 8.00 7.74 180 min, 23°C 27010 Nitrogen 8.0 7.74 180 min, 23°C 180 min, 23°C 27113 Argon 02-free) Argon (02-free) 8.0 7.63 180 min at RT 27131 Argon 02-free) not degassed 8.0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
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2856 Nirogen nöl degassed 7,98 7,78 180 min 4 RT (20°C) 2662 Nitrogen 8,0 7,8 180 min, 28°C 2664 Nitrogen 8,0 7,8 180 min, 28°C 2664 Nitrogen Argon (02-free) 8,00 7,71 3hors ad RT 2674 Argon (02-free) 8,00 7,74 180 min at 21°C 2685 Nitrogen 8,00 7,74 180 min at 21°C 2705 Argon O2-free) Argon (02-free) 8,0 7,74 180 min 23°C 2706 Argon O2-free) Argon (02-free) 8,0 7,8 180 min, 23°C 2711 Nitrogen Nitrogen 8,0 7,7 180 and 2,3'C 2713 Argon O2-free) not degassed 8,0 7,7 180 min, 23°C 2714 Argon O2-free) not degassed 8,0 7,7 180 min 42°C 2725 Urason O2-free) not degassed 8,0 7,8 180 min 42°C 2730 Nitrogen <td< td=""><td></td><td></td><td>Nitrogen</td><td></td><td>7.78</td><td>180 min/21.8°C</td></td<>			Nitrogen		7.78	180 min/21.8°C
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2668 Argon 7.7 7.8 3 hrs and RT 2874 Argon O2-free) Argon (O2-free) 8.00 7.71 3hours 24.6°C 2682 Nitrogen Nitrogen 8.03 7.8 180 min at 21°C 2685 Nitrogen Nitrogen 8.00 7.74 180 and 23.5 2700 Argon O2-free) Argon (O2-free) 8.00 8 180 min at 20°C 2706 Argon O2-free) Argon (O2-free) 8.00 7.8 180 rion temp. 2711 Nitrogen Nitrogen 8.0 7.4 180 min, 23°C 2713 Argon O2-free) not degassed 8.0 7.7 180 aft 7 2725 uitrasonic not degassed 8.0 7.7 180 aft RT 2725 uitrasonic not degassed 8.0 7.8 180 min at RT 2738 Argon Argon 8.0 7.8 180 min at RT 2744 rod degassed 8.0 7.7 180 min at RT 2738 Argo	2662	Nitrogen	Nitrogen	8.0	7.8	180 min, 26°C
268 Argon 7,7 7.8 3 hrs and RT 2674 Argon O2-free) Argon (O2-free) 8.00 7.71 3 hours 24.6°C 2682 Nitrogen Nitrogen 8.03 7.8 180 min at 21°C 2695 Nitrogen Nitrogen 8.00 7.7 180 and 23.5 2700 Argon Q2-free) Argon (02-free) 8.00 8 180 min, 23°C 2706 Argon Q2-free) Argon (02-free) 8.0 7.4 180 min, 23°C 2711 Nitrogen Nitrogen 8.0 7.4 180 min, 23°C 2714 Argon Q2-free) not degassed 8.0 7.7 180 at RT 2725 uitrasonic not degassed 8.0 7.7 180 at RT 2725 uitrasonic not degassed 8.0 7.7 180 at RT 2730 Nitrogen not degassed 8.0 7.8 180 min at RT 2732 uitrasonic not degassed 8.0 7.5 8.0 180 min at RT <td>2664</td> <td>Nitrogen</td> <td>Nitrogen</td> <td>8.0</td> <td>7.8</td> <td>180 min</td>	2664	Nitrogen	Nitrogen	8.0	7.8	180 min
2674 Arigon (22-free) 8.00 7.71 3hours 24.6°C 2682 Nitrogen Nitrogen 8.00 7.74 180 min at 21°C 2695 Nitrogen Nitrogen 8.00 7.74 180 min at 20°C 2705 Argon O2-free) Argon (02-free) 8.00 7.74 180 min at 20°C 2706 Argon O2-free) Argon (02-free) 8.0 7.8 180 min, 23°C 2711 Nitrogen Nitrogen 8.0 7.4 180 min, 23°C 2713 Argon O2-free) not degassed 8.0 7.7 180 at RT 2725 utrasonic not degassed 8.0 7.7 180 min 2.0°2.3°C 2730 Nitrogen nt degassed 8.0 7.6 180 min 170-2.3°C 2730 Nitrogen not degassed 8.0 7.8 180 min 2.7°C 3109 Nitrogen 7.94 7.68 180 min 2.7°C 3109 Nitrogen not degassed 8.0 7.7 3116 Argon 02-fre	2668	Argon		7.7	7.8	3 hrs and RT
2882 Nitrogen Nitrogen 8.03 7.8 180 min at 21°C 2695 Nitrogen Nitrogen 8.00 7.74 180 min at 20°C 2702 Nitrogen Nitrogen 8.00 7.7 180 and 23.5 2705 Argon O2-free) Argon (02-free) 8.00 8 180 min, 23°C 2711 Nitrogen Nitrogen 8.0 7.8 180 min, 23°C 2714 Argon O2-free) not degassed 8.0 7.7 180 at RT 2725 Uitrasonic not degassed 8.0 7.7 180 min, 22°C 2733 Nitrogen not degassed 8.0 7.7 180 min at 21°C 2734 Argon O2-free) not degassed 8.0 7.7 180 min at 22°C 2725 Uitrasonic not degassed 8.0 7.8 180 min at 24°C 2738 Argon Argon (02-free) 7.9 7.8 180 min at 24°C 3109 Nitrogen not degassed 8.0 7.5 - 8.0 180 min		-	-	8.00	7.71	3hours 24.6°C
2865 Nitroğen Nitroğen 8.00 7.74 180 min at 20°C 2702 Nitrogen Nitrogen 8.00 7.7 180 and 23.5 2705 Argon O2-free) Argon (02-free) 8.00 8 180 min, 23 °C 2706 Argon O2-free) Nitrogen 8.0 7.8 180 min, 23 °C 2711 Nitrogen Nitrogen 8.0 7.4 180 min, 23 °C 2713 Argon O2-free) not degassed 8.0 7.7 180 at RT 2725 ultrasonic not degassed 8.0 7.63 180 min 20-23°C 2730 Nitrogen not degassed 8.0 7.84 180 min at RT 2733 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3109 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3116 Argon 02-free) Argon (02-free) 7.9 7.84 180 min at RT 3150 Argon 02-free) not degassed 8.0 7.70 <td< td=""><td></td><td>o ,</td><td></td><td></td><td></td><td></td></td<>		o ,				
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2716 Argon 02-free) not degassed 8.0 7.9 180 min, 23°C 2721 Argon 02-free) not degassed 8.0 7.7 180 atl RT 2725 Ultrasonic not degassed 8,00 7,63 180 min / 20-23°C 2730 Nitrogen not degassed 8.4/-0.1 7 – 8 180 min at RT 2738 Argon Argon 8.0 7.7 7.9 180 min at RT 2731 Nitrogen Nitrogen 7.94 7.68 180 min at 24°C 3100 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3116 Argon 0.2-free) Argon (02-free) 7.9 7.8 180 min at RT 3150 Argon not degassed 8.0 7.5 - 8.0 180 min at RT 3151 Argon 0.2-free) Argon (02-free) 7.99 7.60 180 min at RT 3151 Argon 0.2-free) Argon (02-free) 7.99 7.60 180 min at RT 3152 Argon 0.2-free Argon (02-free)					7 7 4	
2721 Argon O2-free) not degassed 8.0 7.7 180 at RT 2725 ultrasonic not degassed 8.00 7.63 180 min / 20-23°C 2730 Nitrogen not degassed 8+/-0.1 7 – 8 180 min at RT 2733 Argon Argon 8.0 7.8 180 min at RT 2741 not degassed 7.7 7.9 180 and 27 3100 Nitrogen Nitrogen 7.94 7.68 180 min at RT (15-28°C) 3164 Nitrogen not degassed 8.0 7.7 180 min at RT (15-28°C) 3146 Nitrogen not degassed 8.0 7.5 8.0 180 min at RT (15-28°C) 3146 Nitrogen not degassed 8.0 7.9 7.8 180 min at RT (15-28°C) 3153 not degassed 8.0 7.96 180 min at RT 180 min at RT 3153 not degassed not degassed 8.06 7.96 180 min at RT 3160 Nitrogen Nitrogen 7.99			2 , ,			
2725 ultrasonic not degassed 8,00 7,63 180 min / 20-23°C 2730 Nitrogen not degassed 8 +/- 0.1 7 - 8 180 min at RT 2738 Argon Argon 8.0 7.8 180 min at RT 2741 not degassed not degassed 7.7 7.9 180 min 22.7°C 3100 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3119 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3116 Argon O2-free) Argon (02-free) 7.9 7.8 180 min at 24°C 3150 Argon not degassed 8.0 7.5 - 8.0 180 min at RT 3151 Argon O2-free) Argon (02-free) 8.06 7.96 180 min 22°C 3154 Nitrogen not degassed 8.06 7.96 180 min at RT 3153 not degassed 8.06 7.96 180 min at RT 180 min at RT 3155 Nitrogen Nitrogen 7.99 7.69		o ,	0			
2730 Nitrogen not degassed 8 +/- 0.1 7 - 8 180 min at RT 2738 Argon Argon 8.0 7.8 180 min 2741 not degassed 7.7 7.9 180 and 27 3100 Nitrogen Nitrogen 7.94 7.68 180 min at 24°C 3100 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3100 Nitrogen not degassed 8.0 7.7 180 min at RT (15-28°C) 3146 Nitrogen not degassed 8.0 8 3h / RT 3150 Argon 02-free) Argon (02-free) 7.9 7.8 180 min at RT (15-28°C) 3151 Argon 02-free) Argon (02-free) 180 min at RT 180 min at RT 3153 not degassed 8.06 7.96 180 min at 22C 3172 7.0 180 min at RT 180 min at RT 3185 Nitrogen Nitrogen 8.00 7.67 8 180 min at RT 3180 Nitrogen Nit		o ,	•			
2738 Argon Argon 8.0 7.8 180 min 2741 not degassed not degassed 7.7 7.9 180 and 27 3100 Nitrogen Nitrogen 7.94 7.68 180 min at 24°C 3100 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3116 Argon O2-free) Argon (02-free) 7.9 7.8 180 min at RT (15-28°C) 3146 Nitrogen not degassed 8.0 7.5 - 8,0 180 min at RT 3150 Argon O2-free) Argon (02-free) 180 min at RT 180 min 220C 3151 Argon O2-free) Argon (02-free) 180 min 220C 180 min, 23°C 3151 Argon O2-free) Argon (02-free) 180 min 23°C 180 min 23°C 3152 Nitrogen Nitrogen 7,99 7,69 3162 3153 Nitrogen Nitrogen 8.00 7.67.8 180 min at RT 3153 Nitrogen Nitrogen 8.00 7.88 3hours,25°C						
2741 not degassed 7.7 7.9 180 and 27 3100 Nitrogen Nitrogen 7.94 7.68 180 min 22.7°C 3109 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3116 Argon O2-free) Argon (O2-free) 7.9 7.8 180 min at RT (15-28°C) 3144 Nitrogen not degassed 8 8 3h / RT 3150 Argon O2-free) Argon (O2-free) 180 min at RT 180 min at RT 3151 Argon O2-free) Argon (O2-free) 180 min at RT 180 min at RT 3151 Argon O2-free) Argon (O2-free) 180 min at RT 180 min at RT 3153 not degassed 8.06 7.96 3h-25°C 3184 Nitrogen Nitrogen 7.99 7.69 3h-25°C 3183 Nitrogen Nitrogen 8.00 7.68 180 min at RT 3185 Nitrogen Nitrogen 8.00 7.68 180 min at RT 3180 Nitrogen Ni	2730	Nitrogen				
3100 Nitrogen Nitrogen 7.94 7.68 180 min 22.7°C 3109 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3116 Argon O2-free) Argon (02-free) 7.9 7.8 180 min at 24°C 3146 Nitrogen not degassed 8 8 3h / RT 3151 Argon O2-free) Argon (02-free) 180 min at RT 180 min at RT 3153 not degassed 8.06 7.96 180 min 22°C 3154 Nitrogen not degassed 8.06 7.69 3h-25°C 3172 7.99 7.69 3h-25°C 3183 Nitrogen Nitrogen 8.00 7.6-7.8 180 min at RT 3183 Nitrogen Nitrogen 8.00 7.68 3hours,25°C 3190 Nitrogen Nitrogen 8.00 7.68 180 min at RT 3192 Argon O2-free) Argon (02-free) 8.0 7.68 180 min at 2°C 3191 Nitrogen Nitrogen 7.9			Argon	8.0	7.8	180 min
3109 Nitrogen not degassed 8.0 7.7 180 min at 24°C 3116 Argon (02-free) Argon (02-free) 7.9 7.8 180 min at RT (15-28°C) 3146 Nitrogen not degassed 8 3h / RT 3150 Argon not degassed 8.0 7.5 - 8.0 180 min at RT 3151 Argon O2-free) Argon (02-free) 180 min at RT 180 min at RT 3153 not degassed 8.06 7.96 180 min at RT 3154 Nitrogen not degassed 8.06 7.96 3h-25°C 3172 7.99 7.69 3h-25°C 3h0 min at RT 3185 Nitrogen Nitrogen 8.00 7.88 3hours,25°C 3190 Nitrogen Nitrogen 8.03 7.83 180 min at RT (about 23°C) 3191 Nitrogen Nitrogen 7.9 7.8 180 min at Q2C 3191 Nitrogen Nitrogen 7.9 7.8 180 min at RT (about 23°C) 3192 Argon 02-fr	2741	not degassed	not degassed	7.7	7.9	180 and 27
3116 Argon O2-free) Argon O2-free) 7.9 7.8 180 min at RT (15-28°C) 3146 Nitrogen not degassed 8 8 3 3/ RT 3150 Argon O2-free) Argon (02-free) 180 min at RT 180 min at RT 3151 Argon O2-free) Argon (02-free) 180 min at RT 180 min at RT 3153 not degassed 8.06 7.96 180 min at RT 3154 Nitrogen 7.99 7.69 180 min at RT 3160 Nitrogen 7.99 7.69 3h-25°C 3183 Nitrogen not degassed 8.00 7.88 180 min at RT 3185 Nitrogen Nitrogen 8.00 7.86 180 min 24°C 3190 Nitrogen Nitrogen 8.03 7.83 180 min at RT (about 23°C) 3191 Nitrogen Nitrogen 8.00 7.68 180 min at 24°C 3191 Nitrogen Nitrogen 7.9 7.8 180 min at 22C 3200 Argon (02-free) <td>3100</td> <td>Nitrogen</td> <td>Nitrogen</td> <td>7.94</td> <td>7.68</td> <td>180 min 22.7°C</td>	3100	Nitrogen	Nitrogen	7.94	7.68	180 min 22.7°C
3146 Nitrogen not degassed 8 8 3h / RT 3150 Argon not degassed 8,0 7,5 - 8,0 180 min RT 3151 Argon O2-free) Argon (O2-free) 180 min at RT 3153 not degassed 8.06 7.96 180 min, 23°C 3154 Nitrogen 7.99 7.69 3h-25°C 3183 Nitrogen not degassed 8.00 7.6-7.8 180 min at RT 3185 Nitrogen Nitrogen 8.00 7.86 180 min 24°C 3190 Nitrogen Nitrogen 8.00 7.88 3hours,25°C 3191 Nitrogen Nitrogen 8.03 7.83 180 min at RT 3192 Argon (O2-free) Argon (O2-free) 8.0 7.68 180 min at 22°C 3192 Argon Argon 8.00 7.75 25°C 3h 3200 Argon Argon 8.00 7.75 25°C 3h 3204 Nitrogen Nitrogen 8.00 7.7 <td>3109</td> <td>Nitrogen</td> <td></td> <td>8.0</td> <td>7.7</td> <td>180 min at 24°C</td>	3109	Nitrogen		8.0	7.7	180 min at 24°C
3146 Nitrogen not degassed 8 8 3h / RT 3150 Argon not degassed 8,0 7,5 - 8,0 180 min RT 3151 Argon O2-free) Argon (O2-free) 180 min at RT 3153 not degassed 8.06 7.96 180 min, 23°C 3154 Nitrogen 7.99 7.69 3h-25°C 3183 Nitrogen not degassed 8.00 7.6-7.8 180 min at RT 3185 Nitrogen Nitrogen 8.00 7.86 180 min 24°C 3190 Nitrogen Nitrogen 8.00 7.88 3hours,25°C 3191 Nitrogen Nitrogen 8.03 7.83 180 min at RT 3192 Argon (O2-free) Argon (O2-free) 8.0 7.68 180 min at 22°C 3192 Argon Argon 8.00 7.75 25°C 3h 3200 Argon Argon 8.00 7.75 25°C 3h 3204 Nitrogen Nitrogen 8.00 7.7 <td>3116</td> <td>Argon O2-free)</td> <td>Argon (O2-free)</td> <td>7.9</td> <td>7.8</td> <td>180 min at RT (15-28°C)</td>	3116	Argon O2-free)	Argon (O2-free)	7.9	7.8	180 min at RT (15-28°C)
3150 Argon not degassed 8,0 7,5 - 8,0 180 min RT 3151 Argon O2-free) Argon (O2-free) 180 min at RT 3153 not degassed 8.06 7.96 180 min at RT 3154 Nitrogen 180 min 220C 180 min RT 3160 Nitrogen 7.99 7.70 180 min 23°C 3172 7.99 7.69 3h-25°C 3183 Nitrogen not degassed 8.00 7.88 3hours,25°C 3190 Nitrogen Nitrogen 8.00 7.86 180 min at RT 3191 Nitrogen Nitrogen 8.00 7.86 180 min at RT 3192 Argon O2-free) Argon (O2-free) 8.00 7.88 180 min at RT (about 23°C) 3191 Nitrogen Nitrogen 7.9 7.8 180 min at RT (about 23°C) 3197 Nitrogen Nitrogen 7.9 7.8 180 min at 22C 3200 Argon Argon 8.00 7.75 25°C 3h						
3151 Argon O2-free) Argon (O2-free) 180 min at RT 3153 not degassed not degassed 8.06 7.96 180 min, 22oC 3154 Nitrogen 7.99 7.70 180 min RT 3160 Nitrogen 7.99 7.69 3h-25°C 3183 Nitrogen not degassed 8.00 7.6-7.8 180 min at RT 3185 Nitrogen Nitrogen 8.00 7.68 3hours,25°C 3190 Nitrogen Nitrogen 8.00 7.86 180 min at RT 3192 Argon O2-free) Nitrogen 8.03 7.83 180 min at RT (about 23°C) 3191 Nitrogen Nitrogen 8.03 7.83 180 min at RT (about 23°C) 3197 Nitrogen Nitrogen 7.9 7.8 180 min at RT (about 23°C) 3197 Nitrogen Nitrogen 7.9 7.8 180 min at 22C 3200 Argon Argon 8.00 7.7 25°C 3h 3204 Nitrogen Nitrogen<						
3153 not degassed not degassed 8.06 7.96 180 min, 220C 180 min RT 3164 Nitrogen Nitrogen 7,99 7,70 180 min, 23°C 3172 7.99 7.69 3h-25°C 3h 3185 Nitrogen Nitrogen 8.00 7.67,8 180 min, 23°C 3183 Nitrogen Nitrogen 8.00 7.69 3h-25°C 3183 Nitrogen Nitrogen 8.00 7.68 3hours,25°C 3190 Nitrogen Nitrogen 8.03 7.83 180 min at RT 3192 Argon O2-free) Argon (O2-free) 8.0 7.68 180 min ad 22C 3200 Argon Argon 7.9 7.8 180 min ad 22C 3200 Argon Nitrogen 8.00 7.75 25°C 3h 3204 Nitrogen Nitrogen 8.0 7.7 2h 21°C 3209 Nitrogen Nitrogen 8.0 7.7 2h 21°C 3210 Nitrogen <td></td> <td></td> <td></td> <td>- / -</td> <td>,,-</td> <td></td>				- / -	,,-	
3154 Nitrogen 180 min RT 3160 Nitrogen 7.99 7.70 180 min, 23°C 3172 7.99 7.69 3h-25°C 3183 Nitrogen not degassed 8,0 7,6-7,8 180 min at RT 3185 Nitrogen Nitrogen 8.00 7.88 3hours,25°C 3190 Nitrogen 8.00 7.86 180 min 24°C 3191 Nitrogen Nitrogen 8.03 7.83 180 min at RT (about 23°C) 3192 Argon O2-free) Argon (O2-free) 8.0 7,68 180 min at RT (about 23°C) 3197 Nitrogen Nitrogen 7,9 7,8 180 min at 22C 3200 Argon Argon 8.00 7.75 25°C 3h 3204 Nitrogen not degassed 7,9 180 min, 22.1°C 3209 Nitrogen Nitrogen 8.00 7.8 3Hour, 21.0°C 3210 Nitrogen Nitrogen 7,9 7.33 180 min at 22°C 3211 Nitrogen Nitrogen 7,9 7.73 180 min, 20.1°C <			5 ()	8.06	7.96	
3160 Nitrogen Nitrogen 7,99 7,70 180 min, 23°C 3172 7.99 7.69 3h-25°C 3183 Nitrogen not degassed 8,0 7,6-7,8 180 min at RT 3185 Nitrogen Nitrogen 8.00 7.88 3hours,25°C 3190 Nitrogen Nitrogen 8.00 7.86 180 min 24°C 3191 Nitrogen Nitrogen 8.00 7.68 180 min 24°C 3191 Nitrogen Nitrogen 8.00 7.68 180 min at RT (about 23°C) 3192 Argon O2-free) Argon (O2-free) 8,0 7.75 25°C 3h 3200 Argon Argon 8.00 7.75 25°C 3h 3204 Nitrogen not degassed 7.9 180 min, 22 °C 3209 Nitrogen Nitrogen 8.00 7.8 3Hour, 21.0 °C 3214 Nitrogen Nitrogen 8.00 7.7 2h 21°C 3214 Nitrogen Nitrogen 8.0 <td></td> <td>•</td> <td></td> <td></td> <td></td> <td></td>		•				
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3185 Nitrogen Nitrogen 8.00 7.88 3hours,25°C 3190 Nitrogen Nitrogen 8.00 7.86 180 min 24°C 3191 Nitrogen Nitrogen 8.03 7.83 180 min, RT 3192 Argon O2-free) Argon (O2-free) 8,0 7,68 180 min at RT (about 23°C) 3197 Nitrogen Nitrogen 7,9 7,8 180 min at Q2C 3200 Argon Argon 8.00 7.75 25°C 3h 3204 Nitrogen not degassed 7,9 180 min, 22 °C 3204 Nitrogen not degassed 7,9 180 min, 22 °C 3204 Nitrogen Nitrogen 8.00 7.8 3Hour, 21.0 °C 3210 Nitrogen Nitrogen 8.00 7.89 180 min, 22.1 °C 3214 Nitrogen Nitrogen 8.00 7.7 180 min, 20jaC 3220 not degassed not degassed 8.0 7.7 180 min, 20jaC 3222 Nitr		Nitrogen	not decreed			
3190 Nitrogen Nitrogen 8.00 7.86 180 min 24°C 3191 Nitrogen Nitrogen 8.03 7.83 180 min, RT 3192 Argon O2-free) Argon (O2-free) 8,0 7,68 180 min at RT (about 23°C) 3197 Nitrogen Nitrogen 7,9 7,8 180 min and 22C 3200 Argon Argon 8.00 7.75 25°C 3h 3204 Nitrogen not degassed 7,9 180 min, 22 °C 3209 Nitrogen Nitrogen 8.0 7.8 3Hour, 21.0 °C 3210 Nitrogen Nitrogen 8.0 7.89 180 min, 22.1 °C 3214 Nitrogen Nitrogen 7.9 7.73 180 min, 22.1 °C 3216 Nitrogen Nitrogen 7.9 7.73 180 min, 22.1 °C 3214 Nitrogen Nitrogen 8.0 7.7 180 min, 20_iaC 3216 Nitrogen Nitrogen 8.0 7.7 180 min, 20_iaC 32220		0			, ,	
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3200 Argon Argon 8.00 7.75 25°C 3h 3204 Nitrogen not degassed 7,9 180 min, 22 °C 3209 Nitrogen Nitrogen 8.0 7.8 3Hour, 21.0 °C 3210 Nitrogen Nitrogen 8 7.7 2h 21°C 3214 Nitrogen Nitrogen 8.00 7.89 180 min, 22.1 °C 3214 Nitrogen Nitrogen 7.9 7.73 180 min, 22.1 °C 3216 Nitrogen Nitrogen 7.9 7.73 180 min, 22.1 °C 3218 Nitrogen Nitrogen 8.0 7.7 180 min, 20, a 3222 not degassed not degassed 8 3 hours and 25°C 3222 Nitrogen Nitrogen 8.0 7.7 182 min - 22°C 3228 Nitrogen not degassed 8.0 3.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3233 Argon Argon						. ,
3204 Nitrogen not degassed 7,9 180 min, 22 °C 3209 Nitrogen Nitrogen 8.0 7.8 3Hour, 21.0 °C 3210 Nitrogen Nitrogen 8 7.7 2h 21°C 3214 Nitrogen Nitrogen 8.00 7.89 180 min, 22.1 °C 3216 Nitrogen Nitrogen 7,9 7,73 180 min, 22.1 °C 3216 Nitrogen Nitrogen 7,9 7,73 180 min, 22.1 °C 3218 Nitrogen Nitrogen 8.00 7.7 180 min, 20,1°C 3220 not degassed not degassed 8 3 hours and 25°C 3222 Nitrogen Nitrogen 8,0 7,7 182 min - 22°C 3228 Nitrogen not degassed 8.0 3 hours at 23 °C 3233 Argon 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min			U U			
3209 Nitrogen Nitrogen 8.0 7.8 3Hour, 21.0 °C 3210 Nitrogen Nitrogen 8 7.7 2h 21°C 3214 Nitrogen Nitrogen 8.00 7.89 180 min, 22.1 °C 3216 Nitrogen Nitrogen 7.9 7.73 180 min at 22°C 3218 Nitrogen Nitrogen 8.0 7.7 180 min, 20,iãC 3220 not degassed not degassed 8 3 hours and 25°C 3222 Nitrogen Nitrogen 8,0 7,7 182 min - 22°C 3228 Nitrogen not degassed 8.0 8.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min				8.00		
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3214 Nitrogen 8.00 7.89 180 min, 22.1 °C 3216 Nitrogen Nitrogen 7,9 7,73 180 min at 22°C 3218 Nitrogen Nitrogen 8.0 7.7 180 min,201ãC 3220 not degassed not degassed 8 3 hours and 25°C 3222 Nitrogen Nitrogen 8,0 7,7 182 min - 22°C 3228 Nitrogen not degassed 8.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min			Nitrogen			3Hour, 21.0 °C
3214 Nitrogen 8.00 7.89 180 min, 22.1 °C 3216 Nitrogen Nitrogen 7,9 7,73 180 min at 22°C 3218 Nitrogen Nitrogen 8.0 7.7 180 min,201ãC 3220 not degassed not degassed 8 3 hours and 25°C 3222 Nitrogen Nitrogen 8,0 7,7 182 min - 22°C 3228 Nitrogen not degassed 8.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min	3210	Nitrogen	Nitrogen	8	7.7	2h 21°C
3216 Nitrogen Nitrogen 7,9 7,73 180 min at 22°C 3218 Nitrogen Nitrogen 8.0 7.7 180 min,20jãC 3220 not degassed not degassed 8 3 hours and 25°C 3222 Nitrogen Nitrogen 8,0 7,7 182 min - 22°C 3228 Nitrogen not degassed 8.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min			· · · · · · · · · · · · · · · · · · ·	8.00	7.89	180 min, 22.1 °C
3218 Nitrogen Nitrogen 8.0 7.7 180 min,20jãC 3220 not degassed not degassed 8 3 hours and 25°C 3222 Nitrogen Nitrogen 8,0 7,7 182 min - 22°C 3228 Nitrogen not degassed 8.0 8.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min			v	7.9	7.73	
3220 not degassed not degassed 8 3 hours and 25°C 3222 Nitrogen Nitrogen 8,0 7,7 182 min - 22°C 3228 Nitrogen not degassed 8.0 8.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min			-			
3222 Nitrogen Nitrogen 8,0 7,7 182 min - 22°C 3228 Nitrogen not degassed 8.0 8.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min						· •
3228 Nitrogen not degassed 8.0 8.0 3 hours at 23 °C 3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min						
3233 Argon Argon 8.00 8.00 180 min / 20.1°C 3237 Nitrogen not degassed 8,03 7,85 180 min						
3237 Nitrogen not degassed 8,03 7,85 180 min			-			
		0				
5240 not degassed not degassed o 8 180 min R1		U U				
	3248	not degassed	not degassed	0	0	

Number of participants per country

5 labs in BANGLADESH

- 2 labs in BRAZIL
- 2 labs in BULGARIA
- 2 labs in CAMBODIA
- 5 labs in FRANCE
- 17 labs in GERMANY
- 1 lab in GUATEMALA
- 8 labs in HONG KONG
- 10 labs in INDIA
- 1 lab in INDONESIA
- 10 labs in ITALY
- 2 labs in KOREA
- 1 lab in LUXEMBOURG
- 2 labs in MEXICO
- 2 labs in MOROCCO
- 34 labs in P.R. of CHINA
- 6 labs in PAKISTAN
- 1 lab in SINGAPORE
- 5 labs in SPAIN
- 2 labs in SRI LANKA
- 6 labs in SWITZERLAND
- 2 labs in TAIWAN R.O.C.
- 3 labs in THAILAND
- 2 labs in THE NETHERLANDS
- 1 lab in TUNISIA
- 5 labs in TURKEY
- 1 lab in U.S.A.
- 2 labs in UNITED KINGDOM
- 5 labs in VIETNAM

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
- n.e. = not evaluated
- n.d. = not detected

Literature:

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