

Quality Control Certificate

Product: **Standard Column**
 Product No.: 19512
 Lot No.: **718146**

Storage Recommendations: Store the column at room temperature below 25°C

Description: The standard Column is part of a 3- or 4-column setup used for the sample preparation of environmental-, food- / feed- and similar matrices with DEXTech systems from LCTech for the analysis of polychlorinated dibenzo-p-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) and polychlorinated biphenyl (PCB) congeners.

Quality Control Release Inspection and Test Specification

Test Procedure: A solvent blank, spiked with quantification standard has been cleaned on a DEXTech Plus system, spiked with recovery standard, evaporated with the D-EVA and has been quantified with a HRGC/HRMS DFS from Thermo Fisher Scientific at a resolution of R > 10000.

Results Blank Value:	PCDD/F-TEQ:	0,16	pg/column
		(crit: <	0,7 pg/column)
	dl-PCB-TEQ:	0,0352	pg/column
		(crit: <	0,05 pg/column)
	Sum Total PCB:	113	pg/column
		(crit: <	300 pg/column)

Results Recoveries:	PCDD/F	86	to	109	%	(crit: 70	to	120	%)
	PCB	71	to	105	%	(crit: 70	to	120	%)

This is to certify that the Standard Column, Lot 718146, passed the required test specifications and is released for sale.

date: 05.05.2023 sign.: T. Keshmeir

The company LCTech GmbH is certified according to ISO 9001



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Hazards:	<p>NOT FOR HUMAN OR DRUG USE!</p> <p>The 209 Column is designed and prepared for usage with the Alumina Column from LCTech and for laboratory use only. This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion, all procedures should be carried out with suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed according to national and regional regulations.</p>
Quality Control:	<p>All ingredients are traceable to certified lots of our supplier. In addition, any ingredient with a new lot will be checked on contamination and efficiency before releasing for production. Monitoring the ongoing production, several columns are chosen at random day for analysis to check on contamination and efficiency.</p>
Quality Management:	<p>This product was produced using a Quality Management System registered to the ISO 9001:2015 (DEKRA)</p>
Documentation / Data Attached:	<p>table 1 & 2: blankvalues of PCDD/F and PCB table 3 & 4: 13C-Recoveries of PCDD/F and PCB</p>
Analytics	<p>All the Columns (n>5) have to perform a clean-up of a solvent blank (10 mL n-hexane), spiked with a 13C - labelled quantifier-standard solution with a default alumina plus or pure 209 method onto a DEXTech Pure or Plus system. There are 2 fractions, fraction 1 (all 209 PCB) and fraction 2 (PCDD/F). Both fractions are spiked with the corresponding 13C - labelled recovery- standard solutions and evaporated with the D-EVA vacuum centrifuge. The extracts are measured with a HRMS-DFS from Thermo Fisher Scientific with a resolution of R > 10000. The HRGCs are equipped with 60 m DB5 MS Columns. For PCDD/F 5µL are injected via PTV, for PCB</p>
Remarks	<p>Our suppliers maintain the highest standard of quality, however due to the high temperature necessary for several steps in the production, some small charred particles may be visible within a batch of silica or filters without any effect on the clean-up.</p>

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Results:

Lockmass check: No significant disturbances, or indicators for contaminations are detected.

Blanks: n= 9

Table 1: PCDD/F blank

	[pg/column]
2,3,7,8-TCDF	0,1
1,2,3,7,8-PeCDF	0,07
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	0,047
1,2,3,6,7,8-HxCDF	0,039
2,3,4,6,7,8-HxCDF	0,09
1,2,3,7,8,9-HxCDF	0,06
1,2,3,4,6,7,8-HpCDF	0,08
1,2,3,4,7,8,9-HpCDF	0,038
1,2,3,4,6,7,8,9-OCDF	0,26
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	0,07
1,2,3,4,7,8-HxCDD	0,031
1,2,3,6,7,8-HxCDD	<0,108
1,2,3,7,8,9-HxCDD	0,1
1,2,3,4,6,7,8-HpCDD	0,16
1,2,3,4,6,7,8,9-OCDD	0,6

Table 2: PCB blank

	[pg/column]
PCB-#28	5,53
PCB-#52	12,27
PCB-#101	16,15
PCB-#153	26,37
PCB-#138	40,13
PCB-#180	12,548
PCB-#81	0,19
PCB-#77	0,506
PCB-#126	0,2815
PCB-#169	0,195
PCB-#123	0,62
PCB-#118	18,96
PCB-#114	0,589
PCB-#105	6,38
PCB-#167	1,438
PCB-#156	3,437
PCB-#157	0,92
PCB-#189	0,767

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,15
upper bound	0,16

PCB-TEQ	[pg/column]
lower bound	0,0352
upper bound	0,0352
Sum DIN	113

Table 3: PCDD/F recoveries

	[%]	RSD [%]	
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	96	17
	1,2,3,7,8-PeCDF	87	20
	2,3,4,7,8-PeCDF	89	19
	1,2,3,4,7,8-HxCDF	96	8
	1,2,3,6,7,8-HxCDF	103	6
	2,3,4,6,7,8-HxCDF	100	6
	1,2,3,7,8,9-HxCDF	105	13
	1,2,3,4,6,7,8-HpCDF	108	9
	1,2,3,4,7,8,9-HpCDF	109	17
	1,2,3,4,6,7,8,9-OCDF	102	15
	2,3,7,8-TCDD	86	18
	1,2,3,7,8-PeCDD	93	18
	1,2,3,4,7,8-HxCDD	104	6
	1,2,3,6,7,8-HxCDD	90	7
	1,2,3,7,8,9-HxCDD	108	11
	1,2,3,4,6,7,8-HpCDD	104	12
	1,2,3,4,6,7,8,9-OCDD	93	12

Table 4: PCB recoveries

	[%]	RSD [%]	
PCB 13C Recoveries [%]	PCB-#28	84	6
	PCB-#52	86	12
	PCB-#101	91	4
	PCB-#153	92	3
	PCB-#138	93	3
	PCB-#180	89	5
	PCB-#81	90	10
	PCB-#77	103	12
	PCB-#126	105	14
	PCB-#169	105	13
	PCB-#123	78	5
	PCB-#118	71	5
	PCB-#114	80	4
	PCB-#105	74	6
	PCB-#167	73	10
	PCB-#156	76	6
	PCB-#157	72	9
	PCB-#189	75	7