

## Quality Control Certificate

Product: **Universal Column**  
 Product No.: 19511  
**Lot No.: 717411**

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

Description: The Universal 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:	0,13	pg/column
		(crit: <	0,7 pg/column)
	dl-PCB-TEQ:	0,0072	pg/column
		(crit: <	0,05 pg/column)
	Sum Total PCB:	11	pg/column
		(crit: <	300 pg/column)

Results Recoveries:	PCDD/F	86	to	115	%	(crit: 45	to	130	%)
	PCB	62	to	117	%	(crit: 45	to	130	%)

This is to certify that the Universal Column, Lot 717411, passed the required test specifications and is released for sale.

date: 01.03.2023 sign.: T. Keshmeir

The company LCTech GmbH is certified according to ISO 9001



## QC-Certificate - 19511 - 717411

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 &amp; 2: blankvalues of PCDD/F and PCB table 3 &amp; 4: 13C-Recoveries of PCDD/F and PCB</p>
Analytics	<p>All the Columns (n&gt;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 &gt; 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>

QC-Certificate - 19511 - 717411

Results:

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

Blanks: n= 5

Table 1: PCDD/F blank

	[pg/column]
2,3,7,8-TCDF	0,08
1,2,3,7,8-PeCDF	0,05
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	<0,027
1,2,3,6,7,8-HxCDF	<0,018
2,3,4,6,7,8-HxCDF	<0,045
1,2,3,7,8,9-HxCDF	<dl
1,2,3,4,6,7,8-HpCDF	<0,063
1,2,3,4,7,8,9-HpCDF	<0,018
1,2,3,4,6,7,8,9-OCDF	0,11
2,3,7,8-TCDD	<0,036
1,2,3,7,8-PeCDD	0,06
1,2,3,4,7,8-HxCDD	<dl
1,2,3,6,7,8-HxCDD	<dl
1,2,3,7,8,9-HxCDD	<dl
1,2,3,4,6,7,8-HpCDD	<0,09
1,2,3,4,6,7,8,9-OCDD	0,2

Table 2: PCB blank

	[pg/column]
PCB-#28	1,96
PCB-#52	2,01
PCB-#101	2,58
PCB-#153	2,01
PCB-#138	1,37
PCB-#180	1,032
PCB-#81	0,03
PCB-#77	<0,18
PCB-#126	0,0613
PCB-#169	<0,045
PCB-#123	0,57
PCB-#118	0,69
PCB-#114	0,261
PCB-#105	0,56
PCB-#167	0,289
PCB-#156	0,878
PCB-#157	0,5
PCB-#189	0,713

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,12
upper bound	0,13

PCB-TEQ	[pg/column]
lower bound	0,0072
upper bound	0,0072
Sum DIN	11

QC-Certificate - 19511 - 717411

Table 3: PCDD/F recoveries

	[%]	RSD [%]	
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	102	6
	1,2,3,7,8-PeCDF	110	11
	2,3,4,7,8-PeCDF	108	11
	1,2,3,4,7,8-HxCDF	100	12
	1,2,3,6,7,8-HxCDF	108	11
	2,3,4,6,7,8-HxCDF	100	13
	1,2,3,7,8,9-HxCDF	109	13
	1,2,3,4,6,7,8-HpCDF	111	2
	1,2,3,4,7,8,9-HpCDF	110	5
	1,2,3,4,6,7,8,9-OCDF	100	3
	2,3,7,8-TCDD	99	7
	1,2,3,7,8-PeCDD	115	13
	1,2,3,4,7,8-HxCDD	102	10
	1,2,3,6,7,8-HxCDD	86	10
	1,2,3,7,8,9-HxCDD	102	12
	1,2,3,4,6,7,8-HpCDD	100	2
	1,2,3,4,6,7,8,9-OCDD	94	5

Table 4: PCB recoveries

	[%]	RSD [%]	
PCB 13C Recoveries [%]	PCB-#28	110	6
	PCB-#52	117	7
	PCB-#101	100	3
	PCB-#153	109	3
	PCB-#138	100	2
	PCB-#180	89	3
	PCB-#81	89	2
	PCB-#77	106	3
	PCB-#126	88	3
	PCB-#169	92	7
	PCB-#123	77	11
	PCB-#118	76	15
	PCB-#114	76	5
	PCB-#105	66	17
	PCB-#167	65	12
	PCB-#156	68	8
	PCB-#157	68	20
	PCB-#189	62	14