

Quality Control Certificate

Product: **Universal Column**
 Product No.: 19511
 Lot No.: **717218**

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:	0,46	pg/column				
		(crit: <	0,7	pg/column)			
	dl-PCB-TEQ:	0,0203	pg/column				
		(crit: <	0,05	pg/column)			
	Sum Indikator PCB:	8,3	pg/column				
		(crit: <	100	pg/column)			
Results Recoveries:	PCDD/F	76	to 93	%	(crit: 70	to 120	%)
	PCB	81	to 106	%	(crit: 70	to 120	%)

This is to certify that the Universal Column, Lot 19511, passed the required test specifications and is released for sale.

date: 29.11.2022 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 Universal Column is designed and prepared for usage with the Alumina/Florisil Column and Carbon 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 single Column method onto a DEXTech Plus system. The fractions 1 (PCB) and 2 (PCDD/F) are spiked with 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 2µL via SSL.</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= 8

Table 1: PCDD/F blank

	[pg/column]
sample amount [pg/column]	
2,3,7,8-TCDF	0,11
1,2,3,7,8-PeCDF	0,11
2,3,4,7,8-PeCDF	0,12
1,2,3,4,7,8-HxCDF	0,049
1,2,3,6,7,8-HxCDF	0,023
2,3,4,6,7,8-HxCDF	0,11
1,2,3,7,8,9-HxCDF	0,07
1,2,3,4,6,7,8-HpCDF	0,1
1,2,3,4,7,8,9-HpCDF	0,059
1,2,3,4,6,7,8,9-OCDF	0,28
2,3,7,8-TCDD	0,13
1,2,3,7,8-PeCDD	0,17
1,2,3,4,7,8-HxCDD	0,614
1,2,3,6,7,8-HxCDD	0,13
1,2,3,7,8,9-HxCDD	0,069
1,2,3,4,6,7,8-HpCDD	0,2
1,2,3,4,6,7,8,9-OCDD	1,35

Table 2: PCB blank

	[pg/column]
sample amount [pg/sample]	
PCB-#28	1,94
PCB-#52	2,27
PCB-#101	1,17
PCB-#153	1,29
PCB-#138	0,94
PCB-#180	0,694
PCB-#81	0,21
PCB-#77	0,251
PCB-#126	0,1901
PCB-#169	<0,045
PCB-#123	0,59
PCB-#118	0,83
PCB-#114	0,392
PCB-#105	0,77
PCB-#167	0,881
PCB-#156	0,515
PCB-#157	0,53
PCB-#189	0,963

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,46
upper bound	0,46

PCB-TEQ	[pg/column]
lower bound	0,0203
upper bound	0,0203
Sum DIN	8,3

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Table 3: PCDD/F recoveries

	[%]	RSD [%]	
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	88	8
	1,2,3,7,8-PeCDF	86	6
	2,3,4,7,8-PeCDF	87	7
	1,2,3,4,7,8-HxCDF	81	8
	1,2,3,6,7,8-HxCDF	92	7
	2,3,4,6,7,8-HxCDF	83	10
	1,2,3,7,8,9-HxCDF	84	15
	1,2,3,4,6,7,8-HpCDF	93	3
	1,2,3,4,7,8,9-HpCDF	90	5
	1,2,3,4,6,7,8,9-OCDF	86	9
	2,3,7,8-TCDD	82	4
	1,2,3,7,8-PeCDD	86	4
	1,2,3,4,7,8-HxCDD	87	7
	1,2,3,6,7,8-HxCDD	76	7
	1,2,3,7,8,9-HxCDD	83	11
	1,2,3,4,6,7,8-HpCDD	88	6
	1,2,3,4,6,7,8,9-OCDD	82	7

Table 4: PCB recoveries

	[%]	RSD [%]	
PCB 13C Recoveries [%]	PCB-#28	93	7
	PCB-#52	87	7
	PCB-#101	96	5
	PCB-#153	90	6
	PCB-#138	94	5
	PCB-#180	100	5
	PCB-#81	99	9
	PCB-#77	95	6
	PCB-#126	105	5
	PCB-#169	106	5
	PCB-#123	88	9
	PCB-#118	81	11
	PCB-#114	97	7
	PCB-#105	85	11
	PCB-#167	81	8
	PCB-#156	87	10
	PCB-#157	83	14
	PCB-#189	86	15