Quality Control Certificate

Product:	**Smart Column**
Product No.:	19513
Lot No.:	**717516**

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

Description: The Smart Column is part of a 3-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:	0,26	pg/column
		(crit: < 0,7	pg/column)
	dl-PCB-TEQ:	0,0156	pg/column
		(crit: < 0,05	pg/column)
	Sum Indikator PCB:	5,7	pg/column
		(crit: < 100	pg/column)

Results Recoveries:	PCDD/F	75	to	106	%	(crit:	70	to	120	%)
	PCB	79	to	103	%	(crit:	70	to	120	%)

This is to certify that the Smart Column, Lot 19513, passed the required test specifications and is released for sale.

date: 13.12.2022 sign.: T. Kehmeier

The company LCTech GmbH is certified according to ISO 9001

LCTech GmbH
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Germany

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Hazards:	NOT FOR HUMAN OR DRUG USE! The Smart 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.
Quality Control:	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.
Quality Management:	This product was produced using a Quality Management System registered to the ISO 9001:2015 (DEKRA)
Documentation / Data Attached:	table 1 & 2: blankvalues of PCDD/F and PCB table 3 & 4: 13C-Recoveries of PCDD/F and PCB
Analytics	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.
Remarks	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.

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Results:

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

Blanks: n= 6

Table 1: PCDD/F blank

sample amount [pg/column]		[pg/column]
	2,3,7,8-TCDF	0,08
	1,2,3,7,8-PeCDF	0,12
	2,3,4,7,8-PeCDF	0,1
	1,2,3,4,7,8-HxCDF	0,056
	1,2,3,6,7,8-HxCDF	0,027
	2,3,4,6,7,8-HxCDF	0,07
	1,2,3,7,8,9-HxCDF	0,08
	1,2,3,4,6,7,8-HpCDF	0,16
	1,2,3,4,7,8,9-HpCDF	0,033
	1,2,3,4,6,7,8,9-OCDF	15,36
	2,3,7,8-TCDD	0,05
	1,2,3,7,8-PeCDD	0,1
	1,2,3,4,7,8-HxCDD	0,043
	1,2,3,6,7,8-HxCDD	0,23
	1,2,3,7,8,9-HxCDD	0,058
	1,2,3,4,6,7,8-HpCDD	0,35
	1,2,3,4,6,7,8,9-OCDD	2,81

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,26
upper bound	0,26

Table 2: PCB blank

sample amount [pg/sample]		[pg/column]
	PCB-#28	1,49
	PCB-#52	2,22
	PCB-#101	0,71
	PCB-#153	0,44
	PCB-#138	0,63
	PCB-#180	0,258
	PCB-#81	0,1
	PCB-#77	<0,18
	PCB-#126	0,1329
	PCB-#169	0,057
	PCB-#123	0,28
	PCB-#118	0,44
	PCB-#114	0,26
	PCB-#105	15,92
	PCB-#167	1,193
	PCB-#156	0,392
	PCB-#157	0,24
	PCB-#189	0,356

PCB-TEQ	[pg/column]
lower bound	0,0156
upper bound	0,0156
Sum DIN	5,7

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Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]	[%]	RSD [%]
2,3,7,8-TCDF	92	6
1,2,3,7,8-PeCDF	91	5
2,3,4,7,8-PeCDF	87	7
1,2,3,4,7,8-HxCDF	83	5
1,2,3,6,7,8-HxCDF	91	10
2,3,4,6,7,8-HxCDF	81	8
1,2,3,7,8,9-HxCDF	85	11
1,2,3,4,6,7,8-HpCDF	106	3
1,2,3,4,7,8,9-HpCDF	96	6
1,2,3,4,6,7,8,9-OCDF	93	4
2,3,7,8-TCDD	86	4
1,2,3,7,8-PeCDD	92	7
1,2,3,4,7,8-HxCDD	88	10
1,2,3,6,7,8-HxCDD	75	8
1,2,3,7,8,9-HxCDD	85	8
1,2,3,4,6,7,8-HpCDD	95	5
1,2,3,4,6,7,8,9-OCDD	85	6

Table 4: PCB recoveries

PCB 13C Recoveries [%]	[%]	RSD [%]
PCB-#28	94	9
PCB-#52	88	8
PCB-#101	99	3
PCB-#153	100	6
PCB-#138	103	6
PCB-#180	100	5
PCB-#81	93	4
PCB-#77	103	6
PCB-#126	102	4
PCB-#169	101	9
PCB-#123	94	7
PCB-#118	84	10
PCB-#114	96	5
PCB-#105	94	10
PCB-#167	86	12
PCB-#156	90	10
PCB-#157	88	6
PCB-#189	79	14

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