Quality Control Certificate

Product:	**Smart Column**
Product No.:	**19513**
Lot No.:	**715415**

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 via DEva 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:	0,11	pg/column
		(crit: < 0,7	pg/column)
	dl-PCB-TEQ:	0,006	pg/column
		(crit: < 0,05	pg/column)
	Sum Indikator PCB:	5,1	pg/column
		(crit: < 100	pg/column)

Results Recoveries:	PCDD/F	75	to	97	%	(crit: 70	to	120)
	PCB	83	to	103	%	(crit: 70	to	120)

This is to certify that smart column, Lot 715415, passed the required test specifications and is released for sale.

date: 12.08.2021 sign.: T. Kehemeier

The company LCTech GmbH is certified according to ISO 9001:2015

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QC Certificate - Smart Column - 19513 - 715415

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:	Blank values 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:

Table 1: PCDD/F blank (n=5)

Congeneres:	[pg/column]:
2,3,7,8-TCDF	<dl
1,2,3,7,8-PeCDF	<dl
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	<dl
1,2,3,6,7,8-HxCDF	<0,018
2,3,4,6,7,8-HxCDF	<dl
1,2,3,7,8,9-HxCDF	<dl
1,2,3,4,6,7,8-HpCDF	<dl
1,2,3,4,7,8,9-HpCDF	0,042
OCDF	<0,054
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	0,09
1,2,3,4,7,8-HxCDD	<dl
1,2,3,6,7,8-HxCDD	<0,108
1,2,3,7,8,9-HxCDD	<dl
1,2,3,4,6,7,8-HpCDD	0,13
OCDD	0,87

TEQ (WHO 2005)	
lower bound	0,11
upper bound	0,13

Table 2: PCB blank (n=5)

Congeneres:	[pg/column]:
PCB 28	1,69
PCB 52	1,58
PCB 77	<0,045
PCB 81	0,06
PCB 101	0,88
PCB 123	0,1155
PCB 118	0,36
PCB 114	0,0278
PCB 105	0,42
PCB 126	0,0571
PCB 153	0,45
PCB 138	<0,261
PCB 167	0,08
PCB 156	0,13
PCB 157	0,284
PCB 169	<0,027
PCB 180	0,19
PCB 189	0,6

TEQ (WHO 2005)	
lower bound	0,0064
upper bound	0,0064

Sum DIN PCB	5,1

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Results:

13C-Recoveries

Table 3: PCDD/F 13C-recoveries (n=5)

Congeneres:	13C rec [%]
2,3,7,8-TCDF	87
1,2,3,7,8-PeCDF	92
2,3,4,7,8-PeCDF	92
1,2,3,4,7,8-HxCDF	89
1,2,3,6,7,8-HxCDF	90
2,3,4,6,7,8-HxCDF	79
1,2,3,7,8,9-HxCDF	81
1,2,3,4,6,7,8-HpCDF	97
1,2,3,4,7,8,9-HpCDF	88
OCDF	89
2,3,7,8-TCDD	89
1,2,3,7,8-PeCDD	92
1,2,3,4,7,8-HxCDD	81
1,2,3,6,7,8-HxCDD	75
1,2,3,7,8,9-HxCDD	83
1,2,3,4,6,7,8-HpCDD	90
OCDD	84

Table 4: PCB 13C-recoveries (n=5)

Congeneres:	13C rec [%]
PCB 28	85
PCB 52	84
PCB 77	103
PCB 81	87
PCB 101	97
PCB 123	94
PCB 118	87
PCB 114	97
PCB 105	96
PCB 126	95
PCB 153	91
PCB 138	91
PCB 167	90
PCB 156	95
PCB 157	91
PCB 169	95
PCB 180	96
PCB 189	83

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