Quality Control Certificate

Product:	**Smart Column**
Product No.:	**14307**
Lot No.:	**3000231**

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:	0,22	pg/column
		(crit: < 0,7	pg/column)
	dl-PCB-TEQ:	0,006	pg/column
		(crit: < 0,05	pg/column)
	Sum Indikator PCB:	16,42	pg/column
		(crit: < 100	pg/column)

Results Recoveries:	PCDD/F	92	to	111	%	(crit: 70	to	120)
	PCB	81	to	113	%	(crit: 70	to	120)

This is to certify that smart column, Lot 3000231, passed the required test specifications and is released for sale.

date: 20.04.2021 sign.: T. Kehemeier

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

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QC Certificate - Smart Column - 14307 - 3000231

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=6)

Congeneres:	[pg/column]:
2,3,7,8-TCDF	<0,036
1,2,3,7,8-PeCDF	0,06
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	0,132
1,2,3,6,7,8-HxCDF	0,124
2,3,4,6,7,8-HxCDF	<0,045
1,2,3,7,8,9-HxCDF	0,06
1,2,3,4,6,7,8-HpCDF	<dl
1,2,3,4,7,8,9-HpCDF	0,024
OCDF	<0,054
2,3,7,8-TCDD	0,04
1,2,3,7,8-PeCDD	0,13
1,2,3,4,7,8-HxCDD	<0,027
1,2,3,6,7,8-HxCDD	<dl
1,2,3,7,8,9-HxCDD	<0,027
1,2,3,4,6,7,8-HpCDD	<dl
OCDD	<0,108

TEQ (WHO 2005)	
lower bound	0,22
upper bound	0,23

Table 2: PCB blank (n=6)

Congeneres:	[pg/column]:
PCB 28	7,5
PCB 52	2,49
PCB 77	0,17
PCB 81	<0,027
PCB 101	2,31
PCB 123	0,1387
PCB 118	0,54
PCB 114	0,11
PCB 105	0,13
PCB 126	0,0536
PCB 153	2,24
PCB 138	0,66
PCB 167	0,09
PCB 156	0,51
PCB 157	0,049
PCB 169	<0,027
PCB 180	1,13
PCB 189	1,026

TEQ (WHO 2005)	
lower bound	0,0058
upper bound	0,0058

Sum DIN PCB	16,42

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Results:

13C-Recoveries

Table 3: PCDD/F 13C-recoveries (n=6)

Congeneres:	13C rec [%]
2,3,7,8-TCDF	95
1,2,3,7,8-PeCDF	103
2,3,4,7,8-PeCDF	99
1,2,3,4,7,8-HxCDF	109
1,2,3,6,7,8-HxCDF	111
2,3,4,6,7,8-HxCDF	96
1,2,3,7,8,9-HxCDF	92
1,2,3,4,6,7,8-HpCDF	101
1,2,3,4,7,8,9-HpCDF	101
OCDF	103
2,3,7,8-TCDD	102
1,2,3,7,8-PeCDD	104
1,2,3,4,7,8-HxCDD	102
1,2,3,6,7,8-HxCDD	103
1,2,3,7,8,9-HxCDD	101
1,2,3,4,6,7,8-HpCDD	106
OCDD	97

Table 4: PCB 13C-recoveries (n=6)

Congeneres:	13C rec [%]
PCB 28	93
PCB 52	88
PCB 77	102
PCB 81	98
PCB 101	97
PCB 123	98
PCB 118	100
PCB 114	103
PCB 105	102
PCB 126	107
PCB 153	94
PCB 138	97
PCB 167	90
PCB 156	81
PCB 157	85
PCB 169	113
PCB 180	103
PCB 189	84

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