Quality Control Certificate

Product:	**Smart Column**
Product No.:	**14307**
Lot No.:	**3000160**

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-up on a DEXTech Plus system, spiked with recovery standard, evaporated via DEva and has been quantified with a HRGC/HRMS with a resolution of R > 10000.

Results Blank Value:	PCDD/F-TEQ:	0,25	pg/column
		(crit: < 0,7	pg/column
	dl-PCB-TEQ:	0,013	pg/column
		(crit: < 0,05	pg/column
	Sum Indikator PCB:	15,2	pg/column
		(crit: < 100	pg/column

Results Recoveries:	PCDD/F	78	to	107	%	(crit: 70	to	120)
	PCB	86	to	103	%	(crit: 70	to	120)

This is to certify that smart column, Lot 3000160, passed the required test specifications and is released for sale.

date: 20.10.2020 sign.: T. Kehemeier

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

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QC Certificate - Smart Column - 14307 - 3000160

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	0,08
2,3,4,7,8-PeCDF	0,09
1,2,3,4,7,8-HxCDF	0,031
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	0,05
1,2,3,4,6,7,8-HpCDF	0,11
1,2,3,4,7,8,9-HpCDF	<dl
OCDF	0,17
2,3,7,8-TCDD	<0,036
1,2,3,7,8-PeCDD	0,18
1,2,3,4,7,8-HxCDD	<0,027
1,2,3,6,7,8-HxCDD	<dl
1,2,3,7,8,9-HxCDD	0,032
1,2,3,4,6,7,8-HpCDD	0,12
OCDD	1,32

TEQ (WHO 2005)	
lower bound	0,25
upper bound	0,26

Table 2: PCB blank (n=6)

Congeneres:	[pg/column]:
PCB 28	3,91
PCB 52	3,64
PCB 77	0,13
PCB 81	0,106
PCB 101	3,62
PCB 123	0,2447
PCB 118	0,46
PCB 114	0,0908
PCB 105	0,22
PCB 126	0,0995
PCB 153	2,16
PCB 138	1,21
PCB 167	0,247
PCB 156	0,15
PCB 157	0,183
PCB 169	0,104
PCB 180	0,41
PCB 189	0,135

TEQ (WHO 2005)	
lower bound	0,0131
upper bound	0,0131

Sum DIN PCB	15,2

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Results:

13C-Recoveries

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

Congeneres:	13C rec [%]
2,3,7,8-TCDF	98
1,2,3,7,8-PeCDF	88
2,3,4,7,8-PeCDF	88
1,2,3,4,7,8-HxCDF	89
1,2,3,6,7,8-HxCDF	92
2,3,4,6,7,8-HxCDF	82
1,2,3,7,8,9-HxCDF	94
1,2,3,4,6,7,8-HpCDF	103
1,2,3,4,7,8,9-HpCDF	107
OCDF	106
2,3,7,8-TCDD	95
1,2,3,7,8-PeCDD	81
1,2,3,4,7,8-HxCDD	78
1,2,3,6,7,8-HxCDD	86
1,2,3,7,8,9-HxCDD	93
1,2,3,4,6,7,8-HpCDD	94
OCDD	99

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

Congeneres:	13C rec [%]
PCB 28	91
PCB 52	86
PCB 77	103
PCB 81	94
PCB 101	95
PCB 123	94
PCB 118	93
PCB 114	92
PCB 105	90
PCB 126	91
PCB 153	98
PCB 138	102
PCB 167	86
PCB 156	89
PCB 157	93
PCB 169	94
PCB 180	100
PCB 189	94

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