Quality Control Certificate

Product:	**Smart Column**
Product No.:	**14307**
Lot No.:	**3000220**

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:	0,09	pg/column
		(crit: < 0,7	pg/column
	dl-PCB-TEQ:	0,008	pg/column
		(crit: < 0,05	pg/column
	Sum Indikator PCB:	11,5	pg/column
		(crit: < 100	pg/column

Results Recoveries:	PCDD/F	98	to	114	%	(crit: 70	to	120)
	PCB	71	to	117	%	(crit: 70	to	120)

This is to certify that smart column, Lot 3000220, passed the required test specifications and is released for sale.

date: 24.02.2021 sign.: T. Kehemeier

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

LCTech GmbH
Daimlerstraße 4
84419 Obertaufkirchen
Germany

Tel. +49 8082 2717-0
Fax +49 8082 2717-100
info@LCTech.de
www.LCTech.de

QC Certificate - Smart Column - 14307 - 3000220

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	0,1
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	<0,027
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	<0,045
1,2,3,4,6,7,8-HpCDF	<0,063
1,2,3,4,7,8,9-HpCDF	0,023
OCDF	<0,054
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	0,06
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	<0,09
OCDD	0,24

TEQ (WHO 2005)	
lower bound	0,09
upper bound	0,11

Table 2: PCB blank (n=6)

Congeneres:	[pg/column]:
PCB 28	1,91
PCB 52	3,75
PCB 77	0,08
PCB 81	<0,027
PCB 101	2
PCB 123	0,2216
PCB 118	0,39
PCB 114	0,0383
PCB 105	0,21
PCB 126	0,0726
PCB 153	2,27
PCB 138	0,83
PCB 167	0,293
PCB 156	0,19
PCB 157	0,096
PCB 169	<0,027
PCB 180	0,45
PCB 189	0,191

TEQ (WHO 2005)	
lower bound	0,0076
upper bound	0,0076

Sum DIN PCB	11,5

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Results:

13C-Recoveries

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

Congeneres:	13C rec [%]
2,3,7,8-TCDF	103
1,2,3,7,8-PeCDF	107
2,3,4,7,8-PeCDF	101
1,2,3,4,7,8-HxCDF	107
1,2,3,6,7,8-HxCDF	107
2,3,4,6,7,8-HxCDF	102
1,2,3,7,8,9-HxCDF	110
1,2,3,4,6,7,8-HpCDF	98
1,2,3,4,7,8,9-HpCDF	107
OCDF	114
2,3,7,8-TCDD	107
1,2,3,7,8-PeCDD	110
1,2,3,4,7,8-HxCDD	109
1,2,3,6,7,8-HxCDD	106
1,2,3,7,8,9-HxCDD	108
1,2,3,4,6,7,8-HpCDD	104
OCDD	109

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

Congeneres:	13C rec [%]
PCB 28	97
PCB 52	111
PCB 77	107
PCB 81	102
PCB 101	98
PCB 123	73
PCB 118	86
PCB 114	81
PCB 105	80
PCB 126	115
PCB 153	95
PCB 138	93
PCB 167	87
PCB 156	71
PCB 157	75
PCB 169	117
PCB 180	99
PCB 189	80

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