Quality Control Certificate

Product: **Carbon Column**

Product No.:   **15242**

Lot No.:   **714500**

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

Description: The carbon 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:	0,17	pg/column	
	(crit: <	0,7	pg/column
dl-PCB-TEQ:	0,008	pg/column	
	(crit: <	0,05	pg/column
Sum Indikator PCB:	6,5	pg/column	
	(crit: <	100	pg/column

Results Recoveries:

PCDD/F	82	to	120	%	(crit: 70 to 120)
PCB	85	to	120	%	(crit: 70 to 120)

This is to certify that carbon column, Lot 714500, passed the required test specifications and is released for sale.

date: 10.02.2021   sign.: _T. Kehemeir_

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

Hazards: NOT FOR HUMAN OR DRUG USE!

The carbon column is designed and prepared for usage with the alumina/florisil column and universal/standard & smart 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: n/a

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Results:

Lockmass check:

No significant disturbances, or indicators for contaminations are detected.

Blanks:

Table 1: PCDD/F blank (n=9)

Congeneres:	[pg/column]:
2,3,7,8-TCDF	<0,036
1,2,3,7,8-PeCDF	0,09
2,3,4,7,8-PeCDF	0,12
1,2,3,4,7,8-HxCDF	<0,027
1,2,3,6,7,8-HxCDF	0,028
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	<dl
1,2,3,4,7,8,9-HpCDF	<dl
OCDF	<0,054
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	0,1
1,2,3,4,7,8-HxCDD	0,046
1,2,3,6,7,8-HxCDD	<0,108
1,2,3,7,8,9-HxCDD	<0,027
1,2,3,4,6,7,8-HpCDD	<0,09
OCDD	0,14

TEQ (WHO 2005)	
lower bound	0,17
upper bound	0,18

Table 2: PCB blank (n=9)

Congeneres:	[pg/column]:
PCB 28	2,12
PCB 52	1,79
PCB 77	0,05
PCB 81	<0,027
PCB 101	0,89
PCB 123	0,1243
PCB 118	0,32
PCB 114	0,1086
PCB 105	0,12
PCB 126	0,0768
PCB 153	0,63
PCB 138	0,58
PCB 167	0,055
PCB 156	<0,126
PCB 157	0,05
PCB 169	<0,027
PCB 180	0,39
PCB 189	0,042

TEQ (WHO 2005)	
lower bound	0,0083
upper bound	0,0083

Sum DIN PCB	6,5

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Results:

13C-Recoveries

Table 3: PCDD/F 13C-recoveries (n=9)

Congeneres:	13C rec [%]
2,3,7,8-TCDF	91
1,2,3,7,8-PeCDF	103
2,3,4,7,8-PeCDF	94
1,2,3,4,7,8-HxCDF	106
1,2,3,6,7,8-HxCDF	106
2,3,4,6,7,8-HxCDF	113
1,2,3,7,8,9-HxCDF	103
1,2,3,4,6,7,8-HpCDF	110
1,2,3,4,7,8,9-HpCDF	102
OCDF	82
2,3,7,8-TCDD	93
1,2,3,7,8-PeCDD	112
1,2,3,4,7,8-HxCDD	120
1,2,3,6,7,8-HxCDD	120
1,2,3,7,8,9-HxCDD	110
1,2,3,4,6,7,8-HpCDD	104
OCDD	87

Table 4: PCB 13C-recoveries (n=9)

Congeneres:	13C rec [%]
PCB 28	93
PCB 52	85
PCB 77	119
PCB 81	112
PCB 101	94
PCB 123	92
PCB 118	87
PCB 114	93
PCB 105	87
PCB 126	110
PCB 153	94
PCB 138	99
PCB 167	89
PCB 156	101
PCB 157	104
PCB 169	120
PCB 180	98
PCB 189	96

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