Quality Control Certificate

Product: **Carbon Column**

Product No.: **15242**

Lot No.: **715167**

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 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:	0,15	pg/column	
	(crit: <	0,7	pg/column)
dl-PCB-TEQ:	0,002	pg/column	
	(crit: <	0,05	pg/column)
Sum Indikator PCB:	4,6	pg/column	
	(crit: <	100	pg/column)

Results Recoveries:

PCDD/F	71	to	116	%	(crit: 70	to	120	)
PCB	70	to	104	%	(crit: 70	to	120	)

This is to certify that carbon column, Lot 715167, passed the required test specifications and is released for sale.

date: 12.01.2022   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=6)

Congeneres:	[pg/column]:
2,3,7,8-TCDF	<0,036
1,2,3,7,8-PeCDF	<0,045
2,3,4,7,8-PeCDF	<dl
1,2,3,4,7,8-HxCDF	<dl
1,2,3,6,7,8-HxCDF	<dl
2,3,4,6,7,8-HxCDF	<dl
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	0,02
OCDF	0,08
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	0,14
1,2,3,4,7,8-HxCDD	<dl
1,2,3,6,7,8-HxCDD	<dl
1,2,3,7,8,9-HxCDD	<dl
1,2,3,4,6,7,8-HpCDD	<dl
OCDD	<0,108

TEQ (WHO 2005)	
lower bound	0,15
upper bound	0,18

Table 2: PCB blank (n=6)

Congeneres:	[pg/column]:
PCB 28	1,92
PCB 52	0,97
PCB 77	<dl
PCB 81	<dl
PCB 101	0,59
PCB 123	0,0877
PCB 118	<dl
PCB 114	0,0597
PCB 105	0,14
PCB 126	0,0177
PCB 153	0,22
PCB 138	<0,261
PCB 167	0,118
PCB 156	0,5
PCB 157	0,02
PCB 169	<dl
PCB 180	0,62
PCB 189	0,051

TEQ (WHO 2005)	
lower bound	0,0018
upper bound	0,0021

Sum DIN PCB	4,6

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Results:

13C-Recoveries

Table 3: PCDD/F 13C-recoveries (n=6) *Table 4: PCB 13C-recoveries (n=6)*

Congeneres:	13C rec [%]
2,3,7,8-TCDF	111
1,2,3,7,8-PeCDF	98
2,3,4,7,8-PeCDF	92
1,2,3,4,7,8-HxCDF	91
1,2,3,6,7,8-HxCDF	87
2,3,4,6,7,8-HxCDF	77
1,2,3,7,8,9-HxCDF	79
1,2,3,4,6,7,8-HpCDF	116
1,2,3,4,7,8,9-HpCDF	83
OCDF	94
2,3,7,8-TCDD	104
1,2,3,7,8-PeCDD	77
1,2,3,4,7,8-HxCDD	101
1,2,3,6,7,8-HxCDD	71
1,2,3,7,8,9-HxCDD	88
1,2,3,4,6,7,8-HpCDD	99
OCDD	84

Congeneres:	13C rec [%]
PCB 28	82
PCB 52	85
PCB 77	81
PCB 81	82
PCB 101	76
PCB 123	82
PCB 118	84
PCB 114	104
PCB 105	76
PCB 126	74
PCB 153	70
PCB 138	77
PCB 167	75
PCB 156	78
PCB 157	77
PCB 169	75
PCB 180	98
PCB 189	85

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