Quality Control Certificate

Product: **Carbon Column**

Product No.: 15242

Lot No.: 718208

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 with the D-EVA 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:	0,05	pg/column
		(crit: < 0,7	pg/column)
	dl-PCB-TEQ:	0,0026	pg/column
		(crit: < 0,05	pg/column)
	Sum Total PCB:	5,6	pg/column
		(crit: < 300	pg/column)

Results Recoveries:	PCDD/F	70	to	105	%	(crit:	70	to	120	%)
	PCB	76	to	97	%	(crit:	70	to	120	%)

This is to certify that the Carbon Column, Lot 718208, passed the required test specifications and is released for sale.

date: 23.05.2023 sign.: T. Kehmeier

The company LCTech GmbH is certified according to ISO 9001

LCTech GmbH
Daimlerstrasse 4, 84419 Obertaufkirchen
Germany

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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: blankvalues of PCDD/F and PCB table 3 & 4: 13C-Recoveries of PCDD/F and PCB
Analytics	This is to certify that the Carbon Column, Lot , passed the required test specifications and is released for sale.
Remarks	n/a

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Results:

Lockmass check: No significant disturbances, or indicators for contaminations are detected.

Blanks: n= 8

Table 1: PCDD/F blank

sample amount [pg/column]		[pg/column]
	2,3,7,8-TCDF	<dl
	1,2,3,7,8-PeCDF	<dl
	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	<dl
	1,2,3,4,6,7,8-HpCDF	<dl
	1,2,3,4,7,8,9-HpCDF	<dl
	1,2,3,4,6,7,8,9-OCDF	<dl
	2,3,7,8-TCDD	<dl
	1,2,3,7,8-PeCDD	<0,054
	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
	1,2,3,4,6,7,8,9-OCDD	<dl

Table 2: PCB blank

sample amount [pg/sample]		[pg/column]
	PCB-#28	1,97
	PCB-#52	1,54
	PCB-#101	0,54
	PCB-#153	0,81
	PCB-#138	0,37
	PCB-#180	0,389
	PCB-#81	<dl
	PCB-#77	<dl
	PCB-#126	0
	PCB-#169	<0,027
	PCB-#123	<0,18
	PCB-#118	0,26
	PCB-#114	0,075
	PCB-#105	0,12
	PCB-#167	0,067
	PCB-#156	0,066
	PCB-#157	0,06
	PCB-#189	0,108

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,02
upper bound	0,05

PCB-TEQ	[pg/column]
lower bound	0,0026
upper bound	0,0026
Sum DIN	5,6

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Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]	[%]	RSD [%]
2,3,7,8-TCDF	95	7
1,2,3,7,8-PeCDF	70	7
2,3,4,7,8-PeCDF	79	10
1,2,3,4,7,8-HxCDF	93	12
1,2,3,6,7,8-HxCDF	104	12
2,3,4,6,7,8-HxCDF	105	10
1,2,3,7,8,9-HxCDF	101	9
1,2,3,4,6,7,8-HpCDF	104	7
1,2,3,4,7,8,9-HpCDF	96	7
1,2,3,4,6,7,8,9-OCDF	90	6
2,3,7,8-TCDD	73	9
1,2,3,7,8-PeCDD	74	9
1,2,3,4,7,8-HxCDD	104	9
1,2,3,6,7,8-HxCDD	90	10
1,2,3,7,8,9-HxCDD	104	8
1,2,3,4,6,7,8-HpCDD	97	6
1,2,3,4,6,7,8,9-OCDD	87	6

Table 4: PCB recoveries

PCB 13C Recoveries [%]	[%]	RSD [%]
PCB-#28	89	4
PCB-#52	80	5
PCB-#101	92	7
PCB-#153	93	6
PCB-#138	97	3
PCB-#180	92	10
PCB-#81	77	6
PCB-#77	79	6
PCB-#126	80	7
PCB-#169	76	10
PCB-#123	87	4
PCB-#118	83	5
PCB-#114	91	6
PCB-#105	86	6
PCB-#167	82	6
PCB-#156	89	5
PCB-#157	89	5
PCB-#189	87	5

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