

Quality Control Certificate

Product: Carbon Column**Product No.:** 15242**Lot No.:** 714818**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:	0,22	pg/column
	(crit: < 0,7	pg/column)
dl-PCB-TEQ:	0,009	pg/column
	(crit: < 0,05	pg/column)
Sum Indikator PCB:	11,37	pg/column
	(crit: < 100	pg/column)

Results Recoveries:

PCDD/F	83	to	108	%	(crit: 70 to 120)
PCB	76	to	96	%	(crit: 70 to 120)

This is to certify that carbon column, Lot 714818, passed the required test specifications and is released for sale.

date: 27.05.2021 sign.: _____*T. Kehmeier*

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

Analytcs: 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	0,05
1,2,3,7,8-PeCDF	0,1
2,3,4,7,8-PeCDF	0,12
1,2,3,4,7,8-HxCDF	0,045
1,2,3,6,7,8-HxCDF	0,032
2,3,4,6,7,8-HxCDF	<0,045
1,2,3,7,8,9-HxCDF	0,07
1,2,3,4,6,7,8-HpCDF	0,1
1,2,3,4,7,8,9-HpCDF	<0,018
OCDF	0,27
2,3,7,8-TCDD	<0,036
1,2,3,7,8-PeCDD	0,12
1,2,3,4,7,8-HxCDD	0,034
1,2,3,6,7,8-HxCDD	0,12
1,2,3,7,8,9-HxCDD	0,054
1,2,3,4,6,7,8-HpCDD	0,16
OCDD	0,91

TEQ (WHO 2005)	
lower bound	0,22
upper bound	0,22

Table 2: PCB blank (n=9)

Congeneres:	[pg/column]:
PCB 28	2,5
PCB 52	3,77
PCB 77	0,07
PCB 81	0,028
PCB 101	1,65
PCB 123	0,033
PCB 118	0,43
PCB 114	0,0068
PCB 105	0,1
PCB 126	0,0723
PCB 153	1,15
PCB 138	1,23
PCB 167	0,079
PCB 156	0,13
PCB 157	0,039
PCB 169	0,039
PCB 180	0,99
PCB 189	0,179

TEQ (WHO 2005)	
lower bound	0,0085
upper bound	0,0085

Sum DIN PCB	11,37
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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	98
2,3,4,7,8-PeCDF	96
1,2,3,4,7,8-HxCDF	98
1,2,3,6,7,8-HxCDF	102
2,3,4,6,7,8-HxCDF	91
1,2,3,7,8,9-HxCDF	107
1,2,3,4,6,7,8-HpCDF	108
1,2,3,4,7,8,9-HpCDF	101
OCDF	90
2,3,7,8-TCDD	92
1,2,3,7,8-PeCDD	101
1,2,3,4,7,8-HxCDD	102
1,2,3,6,7,8-HxCDD	86
1,2,3,7,8,9-HxCDD	108
1,2,3,4,6,7,8-HpCDD	100
OCDD	83

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

Congeneres:	13C rec [%]
PCB 28	86
PCB 52	80
PCB 77	93
PCB 81	81
PCB 101	90
PCB 123	87
PCB 118	85
PCB 114	91
PCB 105	79
PCB 126	85
PCB 153	93
PCB 138	96
PCB 167	87
PCB 156	86
PCB 157	88
PCB 169	91
PCB 180	95
PCB 189	76

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