

Quality Control Certificate

Product: **Carbon Column**
 Product No.: 15242
 Lot No.: **717550**

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:	0,38	pg/column
		(crit: <	0,7 pg/column)
	dl-PCB-TEQ:	0,0106	pg/column
		(crit: <	0,05 pg/column)
	Sum Indikator PCB:	5,2	pg/column
		(crit: <	100 pg/column)

Results Recoveries:	PCDD/F	79	to	108	%	(crit: 70	to	120	%)
	PCB	90	to	106	%	(crit: 70	to	120	%)

This is to certify that the Carbon Column, Lot 15242, passed the required test specifications and is released for sale.

date: 15.12.2022 sign.: T. Keshmeir

The company LCTech GmbH is certified according to ISO 9001



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Hazards:	<p>NOT FOR HUMAN OR DRUG USE!</p> <p>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.</p>
Quality Control:	<p>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.</p>
Quality Management:	<p>This product was produced using a Quality Management System registered to the ISO 9001:2015 (DEKRA)</p>
Documentation / Data Attached:	<p>table 1 & 2: blankvalues of PCDD/F and PCB table 3 & 4: 13C-Recoveries of PCDD/F and PCB</p>
Analytics	<p>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.</p>
Remarks	<p>n/a</p>

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Results:

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

Blanks: n= 10

Table 1: PCDD/F blank

	[pg/column]
2,3,7,8-TCDF	0,06
1,2,3,7,8-PeCDF	0,08
2,3,4,7,8-PeCDF	0,11
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	0,07
1,2,3,4,6,7,8-HpCDF	<0,063
1,2,3,4,7,8,9-HpCDF	0,085
1,2,3,4,6,7,8,9-OCDF	9,65
2,3,7,8-TCDD	<0,036
1,2,3,7,8-PeCDD	0,28
1,2,3,4,7,8-HxCDD	0,033
1,2,3,6,7,8-HxCDD	<0,108
1,2,3,7,8,9-HxCDD	0,047
1,2,3,4,6,7,8-HpCDD	<0,09
1,2,3,4,6,7,8,9-OCDD	0,35

Table 2: PCB blank

	[pg/column]
PCB-#28	1,12
PCB-#52	1,78
PCB-#101	0,9
PCB-#153	0,52
PCB-#138	0,54
PCB-#180	0,329
PCB-#81	0,04
PCB-#77	<0,18
PCB-#126	0,0977
PCB-#169	<0,045
PCB-#123	0,21
PCB-#118	0,48
PCB-#114	0,128
PCB-#105	0,8
PCB-#167	0,265
PCB-#156	0,264
PCB-#157	0,14
PCB-#189	0,248

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,38
upper bound	0,38

PCB-TEQ	[pg/column]
lower bound	0,0106
upper bound	0,0102
Sum DIN	5,2

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Table 3: PCDD/F recoveries

	[%]	RSD [%]	
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	93	4
	1,2,3,7,8-PeCDF	92	7
	2,3,4,7,8-PeCDF	96	8
	1,2,3,4,7,8-HxCDF	81	12
	1,2,3,6,7,8-HxCDF	92	5
	2,3,4,6,7,8-HxCDF	80	8
	1,2,3,7,8,9-HxCDF	86	10
	1,2,3,4,6,7,8-HpCDF	108	6
	1,2,3,4,7,8,9-HpCDF	100	9
	1,2,3,4,6,7,8,9-OCDF	92	12
	2,3,7,8-TCDD	90	11
	1,2,3,7,8-PeCDD	90	8
	1,2,3,4,7,8-HxCDD	80	12
	1,2,3,6,7,8-HxCDD	79	8
	1,2,3,7,8,9-HxCDD	82	9
	1,2,3,4,6,7,8-HpCDD	96	9
	1,2,3,4,6,7,8,9-OCDD	86	12

Table 4: PCB recoveries

	[%]	RSD [%]	
PCB 13C Recoveries [%]	PCB-#28	106	4
	PCB-#52	103	4
	PCB-#101	101	2
	PCB-#153	96	3
	PCB-#138	96	6
	PCB-#180	102	5
	PCB-#81	90	3
	PCB-#77	99	3
	PCB-#126	96	3
	PCB-#169	93	4
	PCB-#123	102	6
	PCB-#118	98	5
	PCB-#114	105	6
	PCB-#105	97	6
	PCB-#167	98	3
	PCB-#156	99	4
	PCB-#157	93	4
	PCB-#189	99	4