

Quality Control Certificate

Product: **Carbon Column**
Product No.: 15242
Lot No.: **717240**

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:	0,54	pg/column	(crit: < 0,7	pg/column)
dl-PCB-TEQ:	0,02	pg/column	(crit: < 0,05	pg/column)
Sum Indikator PCB:	7,4	pg/column	(crit: < 100	pg/column)

Results Recoveries:

PCDD/F	74	to 93	%	(crit: 70	to 120	%)
PCB	77	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: 09.11.2022 sign.: 

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/Florisol 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= 6

Table 1: PCDD/F blank

	[pg/column]
sample amount [pg/column]	
2,3,7,8-TCDF	0,13
1,2,3,7,8-PeCDF	0,12
2,3,4,7,8-PeCDF	0,13
1,2,3,4,7,8-HxCDF	0,062
1,2,3,6,7,8-HxCDF	0,025
2,3,4,6,7,8-HxCDF	0,14
1,2,3,7,8,9-HxCDF	0,08
1,2,3,4,6,7,8-HpCDF	0,11
1,2,3,4,7,8,9-HpCDF	0,073
1,2,3,4,6,7,8,9-OCDF	0,36
2,3,7,8-TCDD	0,15
1,2,3,7,8-PeCDD	0,19
1,2,3,4,7,8-HxCDD	0,815
1,2,3,6,7,8-HxCDD	0,15
1,2,3,7,8,9-HxCDD	0,083
1,2,3,4,6,7,8-HpCDD	0,25
1,2,3,4,6,7,8,9-OCDD	1,68

Table 2: PCB blank

	[pg/column]
sample amount [pg/sample]	
PCB-#28	2,09
PCB-#52	2,08
PCB-#101	1,1
PCB-#153	1,07
PCB-#138	0,72
PCB-#180	0,322
PCB-#81	0,07
PCB-#77	<0,18
PCB-#126	0,1901
PCB-#169	<0,045
PCB-#123	0,48
PCB-#118	0,68
PCB-#114	0,247
PCB-#105	0,68
PCB-#167	0,734
PCB-#156	0,438
PCB-#157	0,35
PCB-#189	0,67

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,54
upper bound	0,54

PCB-TEQ	[pg/column]
lower bound	0,0202
upper bound	0,0202
Sum DIN	7,4

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Table 3: PCDD/F recoveries

	[%]	RSD [%]	
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	85	5
	1,2,3,7,8-PeCDF	83	4
	2,3,4,7,8-PeCDF	84	5
	1,2,3,4,7,8-HxCDF	78	4
	1,2,3,6,7,8-HxCDF	91	7
	2,3,4,6,7,8-HxCDF	79	4
	1,2,3,7,8,9-HxCDF	77	3
	1,2,3,4,6,7,8-HpCDF	93	3
	1,2,3,4,7,8,9-HpCDF	88	5
	1,2,3,4,6,7,8,9-OCDF	82	2
	2,3,7,8-TCDD	81	3
	1,2,3,7,8-PeCDD	85	4
	1,2,3,4,7,8-HxCDD	83	4
	1,2,3,6,7,8-HxCDD	74	5
	1,2,3,7,8,9-HxCDD	78	5
	1,2,3,4,6,7,8-HpCDD	88	6
	1,2,3,4,6,7,8,9-OCDD	79	5

Table 4: PCB recoveries

	[%]	RSD [%]	
PCB 13C Recoveries [%]	PCB-#28	94	7
	PCB-#52	88	6
	PCB-#101	98	4
	PCB-#153	92	5
	PCB-#138	96	4
	PCB-#180	100	5
	PCB-#81	103	5
	PCB-#77	96	6
	PCB-#126	106	6
	PCB-#169	106	6
	PCB-#123	84	4
	PCB-#118	77	5
	PCB-#114	94	5
	PCB-#105	80	6
	PCB-#167	78	6
	PCB-#156	83	5
	PCB-#157	77	5
PCB-#189	79	6	