Quality Control Certificate

Product: **Carbon Column**

Product No.: 20777

Lot No.: 721613

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:	0,07	pg/column
		(crit: < 0,70	pg/column)
	dl-PCB-TEQ:	0,0044	pg/column
		(crit: < 0,05	pg/column)
	Sum Total PCB:	6,4	pg/column
		(crit: < 300	pg/column)

Results Recoveries:	PCDD/F	76	to	94	%	(crit:	70	to	120	%)
	PCB	80	to	101	%	(crit:	70	to	120	%)

This is to certify that the Carbon Column, Lot 721613, passed the required test specifications and is released for sale.

date: 12.03.2025 sign.: M. Bradis

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= 7

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	<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	<0,045
	1,2,3,4,6,7,8-HpCDF	<0,063
	1,2,3,4,7,8,9-HpCDF	<0,018
	1,2,3,4,6,7,8,9-OCDF	<0,054
	2,3,7,8-TCDD	<0,036
	1,2,3,7,8-PeCDD	<dl
	1,2,3,4,7,8-HxCDD	0,037
	1,2,3,6,7,8-HxCDD	<0,108
	1,2,3,7,8,9-HxCDD	0,033
	1,2,3,4,6,7,8-HpCDD	<dl
	1,2,3,4,6,7,8,9-OCDD	0,23

Table 2: PCB blank

sample amount [pg/sample]		[pg/column]
	PCB-#28	1,31
	PCB-#52	1,98
	PCB-#101	0,78
	PCB-#153	1,05
	PCB-#138	0,89
	PCB-#180	0,437
	PCB-#81	<0,027
	PCB-#77	<dl
	PCB-#126	0,0425
	PCB-#169	<dl
	PCB-#123	0,15
	PCB-#118	0,3
	PCB-#114	0,084
	PCB-#105	0,1
	PCB-#167	0,96
	PCB-#156	0,591
	PCB-#157	0,61
	PCB-#189	1,019

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,04
upper bound	0,07

PCB-TEQ	[pg/column]
lower bound	0,0044
upper bound	0,0047
Sum DIN	6,4

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Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]		[%]	RSD [%]
	2,3,7,8-TCDF	87	4
	1,2,3,7,8-PeCDF	87	6
	2,3,4,7,8-PeCDF	89	6
	1,2,3,4,7,8-HxCDF	83	3
	1,2,3,6,7,8-HxCDF	90	3
	2,3,4,6,7,8-HxCDF	88	3
	1,2,3,7,8,9-HxCDF	91	6
	1,2,3,4,6,7,8-HpCDF	88	5
	1,2,3,4,7,8,9-HpCDF	94	7
	1,2,3,4,6,7,8,9-OCDF	90	8
	2,3,7,8-TCDD	84	4
	1,2,3,7,8-PeCDD	83	4
	1,2,3,4,7,8-HxCDD	91	4
	1,2,3,6,7,8-HxCDD	78	2
	1,2,3,7,8,9-HxCDD	94	6
	1,2,3,4,6,7,8-HpCDD	87	5
	1,2,3,4,6,7,8,9-OCDD	76	9

Table 4: PCB recoveries

PCB 13C Recoveries [%]		[%]	RSD [%]
	PCB-#28	101	2
	PCB-#52	99	4
	PCB-#101	99	4
	PCB-#153	80	4
	PCB-#138	97	4
	PCB-#180	96	3
	PCB-#81	86	4
	PCB-#77	88	4
	PCB-#126	85	8
	PCB-#169	87	9
	PCB-#123	94	3
	PCB-#118	90	3
	PCB-#114	96	3
	PCB-#105	91	4
	PCB-#167	91	2
	PCB-#156	91	2
	PCB-#157	88	4
	PCB-#189	92	3

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