Quality Control Certificate

Product: **Carbon Column**

Product No.: 20777

Lot No.: 719085

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:	0,12	pg/column
		(crit: < 0,7	pg/column)
	dl-PCB-TEQ:	0,0056	pg/column
		(crit: < 0,05	pg/column)
	Sum Total PCB:	11,7	pg/column
		(crit: < 300	pg/column)

Results Recoveries:	PCDD/F	75	to	97	%	(crit:	70	to	120	%)
	PCB	79	to	105	%	(crit:	70	to	120	%)

This is to certify that the Carbon Column, Lot 719085, passed the required test specifications and is released for sale.

date: 04.10.2023 sign.: M. Brachs

The company LCTech GmbH is certified according to ISO 9001

LCTech GmbH
Daimlerstrasse 4, 84419 Obertaufkirchen
Germany

QC-Certificate - 20777 - 719085

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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QC-Certificate - 20777 - 719085

Results:

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

Blanks: n= 6

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	0,035
	2,3,4,6,7,8-HxCDF	<0,045
	1,2,3,7,8,9-HxCDF	0,1
	1,2,3,4,6,7,8-HpCDF	<0,063
	1,2,3,4,7,8,9-HpCDF	0,059
	1,2,3,4,6,7,8,9-OCDF	0,07
	2,3,7,8-TCDD	<0,036
	1,2,3,7,8-PeCDD	<dl
	1,2,3,4,7,8-HxCDD	0,187
	1,2,3,6,7,8-HxCDD	0,11
	1,2,3,7,8,9-HxCDD	0,082
	1,2,3,4,6,7,8-HpCDD	0,1
	1,2,3,4,6,7,8,9-OCDD	0,44

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,09
upper bound	0,12

Table 2: PCB blank

sample amount [pg/sample]		[pg/column]
	PCB-#28	3,84
	PCB-#52	3,75
	PCB-#101	1,56
	PCB-#153	1,6
	PCB-#138	0,11
	PCB-#180	0,793
	PCB-#81	1,47
	PCB-#77	0,103
	PCB-#126	0,0438
	PCB-#169	<0,027
	PCB-#123	0,45
	PCB-#118	0,51
	PCB-#114	0,137
	PCB-#105	0,65
	PCB-#167	0,38
	PCB-#156	0,408
	PCB-#157	0,38
	PCB-#189	0,945

PCB-TEQ	[pg/column]
lower bound	0,0056
upper bound	0,0056
Sum DIN	11,7

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Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]		[%]	RSD [%]
	2,3,7,8-TCDF	80	3
	1,2,3,7,8-PeCDF	77	5
	2,3,4,7,8-PeCDF	83	7
	1,2,3,4,7,8-HxCDF	92	8
	1,2,3,6,7,8-HxCDF	97	10
	2,3,4,6,7,8-HxCDF	92	8
	1,2,3,7,8,9-HxCDF	87	6
	1,2,3,4,6,7,8-HpCDF	95	2
	1,2,3,4,7,8,9-HpCDF	90	7
	1,2,3,4,6,7,8,9-OCDF	92	15
	2,3,7,8-TCDD	75	2
	1,2,3,7,8-PeCDD	85	7
	1,2,3,4,7,8-HxCDD	97	10
	1,2,3,6,7,8-HxCDD	80	8
	1,2,3,7,8,9-HxCDD	88	7
	1,2,3,4,6,7,8-HpCDD	87	4
	1,2,3,4,6,7,8,9-OCDD	86	14

Table 4: PCB recoveries

PCB 13C Recoveries [%]		[%]	RSD [%]
	PCB-#28	83	2
	PCB-#52	79	8
	PCB-#101	91	5
	PCB-#153	82	5
	PCB-#138	88	5
	PCB-#180	98	5
	PCB-#81	86	3
	PCB-#77	85	2
	PCB-#126	87	5
	PCB-#169	88	8
	PCB-#123	101	8
	PCB-#118	98	5
	PCB-#114	102	6
	PCB-#105	104	6
	PCB-#167	93	6
	PCB-#156	101	6
	PCB-#157	100	6
	PCB-#189	105	6

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