Quality Control Certificate

Product: **Carbon Column**

Product No.: 20777

Lot No.: 719993

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:	0,05	pg/column
		(crit: < 0,7	pg/column)
	dl-PCB-TEQ:	0,0022	pg/column
		(crit: < 0,05	pg/column)
	Sum Total PCB:	8,3	pg/column
		(crit: < 300	pg/column)

Results Recoveries:	PCDD/F	75	to	91	%	(crit:	70	to	120	%)
	PCB	75	to	101	%	(crit:	70	to	120	%)

This is to certify that the Carbon Column, Lot 719993, passed the required test specifications and is released for sale.

date: 16.05.2024 sign.: M. Brachs

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= 5

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	<dl
	1,2,3,6,7,8-HxCDF	<dl
	2,3,4,6,7,8-HxCDF	<dl
	1,2,3,7,8,9-HxCDF	<dl
	1,2,3,4,6,7,8-HpCDF	<dl
	1,2,3,4,7,8,9-HpCDF	<dl
	1,2,3,4,6,7,8,9-OCDF	<dl
	2,3,7,8-TCDD	<dl
	1,2,3,7,8-PeCDD	<dl
	1,2,3,4,7,8-HxCDD	<dl
	1,2,3,6,7,8-HxCDD	<dl
	1,2,3,7,8,9-HxCDD	<dl
	1,2,3,4,6,7,8-HpCDD	<dl
	1,2,3,4,6,7,8,9-OCDD	0,29

PCDD/F TEQ (2005)	[pg/column]
lower bound	0
upper bound	0,05

Table 2: PCB blank

sample amount [pg/sample]		[pg/column]
	PCB-#28	1,38
	PCB-#52	2,5
	PCB-#101	0,86
	PCB-#153	0,81
	PCB-#138	0,99
	PCB-#180	1,75
	PCB-#81	<0,027
	PCB-#77	0,068
	PCB-#126	0,0101
	PCB-#169	<dl
	PCB-#123	2,78
	PCB-#118	2,88
	PCB-#114	2,315
	PCB-#105	3,45
	PCB-#167	6,627
	PCB-#156	8,236
	PCB-#157	7,5
	PCB-#189	7,033

PCB-TEQ	[pg/column]
lower bound	0,0022
upper bound	0,0025
Sum DIN	8,3

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Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]		[%]	RSD [%]
	2,3,7,8-TCDF	75	7
	1,2,3,7,8-PeCDF	84	5
	2,3,4,7,8-PeCDF	88	7
	1,2,3,4,7,8-HxCDF	78	5
	1,2,3,6,7,8-HxCDF	85	4
	2,3,4,6,7,8-HxCDF	84	2
	1,2,3,7,8,9-HxCDF	85	5
	1,2,3,4,6,7,8-HpCDF	87	4
	1,2,3,4,7,8,9-HpCDF	79	3
	1,2,3,4,6,7,8,9-OCDF	81	3
	2,3,7,8-TCDD	79	6
	1,2,3,7,8-PeCDD	89	5
	1,2,3,4,7,8-HxCDD	88	4
	1,2,3,6,7,8-HxCDD	75	2
	1,2,3,7,8,9-HxCDD	91	4
	1,2,3,4,6,7,8-HpCDD	84	2
	1,2,3,4,6,7,8,9-OCDD	77	2

Table 4: PCB recoveries

PCB 13C Recoveries [%]		[%]	RSD [%]
	PCB-#28	81	5
	PCB-#52	75	8
	PCB-#101	90	5
	PCB-#153	88	5
	PCB-#138	94	5
	PCB-#180	95	5
	PCB-#81	83	5
	PCB-#77	87	3
	PCB-#126	96	7
	PCB-#169	100	8
	PCB-#123	86	2
	PCB-#118	78	2
	PCB-#114	87	3
	PCB-#105	89	2
	PCB-#167	91	2
	PCB-#156	91	2
	PCB-#157	89	2
	PCB-#189	101	6

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