Quality Control Certificate

Product: **Universal Column**

Product No.: 19511

Lot No.: 718337

Storage Recommendations: Store the column at room temperature below 25°C

Description: The Universal Column is part of a 3- or 4-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:	0,0227	pg/column
		(crit: < 0,05	pg/column)
	Sum Total PCB:	5	pg/column
		(crit: < 300	pg/column)

Results Recoveries:	PCDD/F	82	to	110	%	(crit:	70	to	120	%)
	PCB	76	to	93	%	(crit:	70	to	120	%)

This is to certify that the Universal Column, Lot 718337, passed the required test specifications and is released for sale.

date: 01.09.2023 sign.: T. Kehmeier

The company LCTech GmbH is certified according to ISO 9001

LCTech GmbH
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Germany

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Hazards:	NOT FOR HUMAN OR DRUG USE! The Universal Column is designed and prepared for usage with the Alumina/Florisil Column and Carbon 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 Universal Column, Lot , passed the required test specifications and is released for sale.
Remarks	Our suppliers maintain the highest standard of quality, however due to the high temperature necessary for several steps in the production, some small charred particles may be visible within a batch of silica or filters without any effect on the clean-up.

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Results:

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

Blanks: n= 12

Table 1: PCDD/F blank

sample amount [pg/column]		[pg/column]
	2,3,7,8-TCDF	<0,036
	1,2,3,7,8-PeCDF	<dl
	2,3,4,7,8-PeCDF	<0,081
	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	<dl
	1,2,3,7,8,9-HxCDF	<dl
	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	<dl
	1,2,3,7,8-PeCDD	0,08
	1,2,3,4,7,8-HxCDD	<dl
	1,2,3,6,7,8-HxCDD	<0,108
	1,2,3,7,8,9-HxCDD	<0,027
	1,2,3,4,6,7,8-HpCDD	<0,09
	1,2,3,4,6,7,8,9-OCDD	0,53

Table 2: PCB blank

sample amount [pg/sample]		[pg/column]
	PCB-#28	1,24
	PCB-#52	1,19
	PCB-#101	0,76
	PCB-#153	0,82
	PCB-#138	0,53
	PCB-#180	0,428
	PCB-#81	0,16
	PCB-#77	0,185
	PCB-#126	0,1623
	PCB-#169	0,209
	PCB-#123	0,24
	PCB-#118	0,62
	PCB-#114	0,224
	PCB-#105	0,45
	PCB-#167	0,236
	PCB-#156	0,388
	PCB-#157	0,38
	PCB-#189	0,397

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,1
upper bound	0,12

PCB-TEQ	[pg/column]
lower bound	0,0227
upper bound	0,0227
Sum DIN	5

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Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]	[%]	RSD [%]
2,3,7,8-TCDF	90	8
1,2,3,7,8-PeCDF	82	14
2,3,4,7,8-PeCDF	87	13
1,2,3,4,7,8-HxCDF	99	13
1,2,3,6,7,8-HxCDF	110	12
2,3,4,6,7,8-HxCDF	109	11
1,2,3,7,8,9-HxCDF	108	12
1,2,3,4,6,7,8-HpCDF	109	9
1,2,3,4,7,8,9-HpCDF	100	11
1,2,3,4,6,7,8,9-OCDF	101	12
2,3,7,8-TCDD	85	10
1,2,3,7,8-PeCDD	87	15
1,2,3,4,7,8-HxCDD	107	11
1,2,3,6,7,8-HxCDD	91	10
1,2,3,7,8,9-HxCDD	108	10
1,2,3,4,6,7,8-HpCDD	101	9
1,2,3,4,6,7,8,9-OCDD	91	11

Table 4: PCB recoveries

PCB 13C Recoveries [%]	[%]	RSD [%]
PCB-#28	92	5
PCB-#52	87	8
PCB-#101	93	2
PCB-#153	92	4
PCB-#138	92	1
PCB-#180	88	6
PCB-#81	83	10
PCB-#77	91	13
PCB-#126	89	15
PCB-#169	86	13
PCB-#123	89	13
PCB-#118	80	11
PCB-#114	85	7
PCB-#105	81	12
PCB-#167	80	12
PCB-#156	84	11
PCB-#157	84	12
PCB-#189	76	13

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