Quality Control Certificate

Product:	**Universal Column**
Product No.:	19511
Lot No.:	**720468**

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:	0,15	pg/column
	(crit: < 0,70	pg/column)
dl-PCB-TEQ:	0,0207	pg/column
	(crit: < 0,05	pg/column)
Sum Total PCB:	9	pg/column
	(crit: < 300	pg/column)

Results Recoveries:

PCDD/F	76	to	103	%	(crit:	70	to	120	%)
PCB	83	to	106	%	(crit:	70	to	120	%)

This is to certify that the Universal Column, Lot 720468, passed the required test specifications and is released for sale.

date: 06.08.2024   sign.: _M.Bradis_

The company LCTech GmbH is certified according to ISO 9001

QC-Certificate - 19511 - 720468

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.

Results:

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

Blanks: n= 6

Table 1: PCDD/F blank

	[pg/column]
2,3,7,8-TCDF	0,11
1,2,3,7,8-PeCDF	0,22
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	0,196
1,2,3,6,7,8-HxCDF	0,101
2,3,4,6,7,8-HxCDF	0,08
1,2,3,7,8,9-HxCDF	0,17
1,2,3,4,6,7,8-HpCDF	0,42
1,2,3,4,7,8,9-HpCDF	0,097
1,2,3,4,6,7,8,9-OCDF	0,18
2,3,7,8-TCDD	<0,036
1,2,3,7,8-PeCDD	<dl
1,2,3,4,7,8-HxCDD	<dl
1,2,3,6,7,8-HxCDD	0,16
1,2,3,7,8,9-HxCDD	<0,027
1,2,3,4,6,7,8-HpCDD	0,16
1,2,3,4,6,7,8,9-OCDD	2,13

(sample amount [pg/column])

Table 2: PCB blank

	[pg/column]
PCB-#28	2,43
PCB-#52	2,17
PCB-#101	1,7
PCB-#153	1,18
PCB-#138	0,85
PCB-#180	0,665
PCB-#81	0,21
PCB-#77	0,295
PCB-#126	0,1571
PCB-#169	0,155
PCB-#123	0,74
PCB-#118	0,87
PCB-#114	0,319
PCB-#105	0,8
PCB-#167	0,58
PCB-#156	0,828
PCB-#157	0,64
PCB-#189	0,843

(sample amount [pg/sample])

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,13
upper bound	0,15

PCB-TEQ	[pg/column]
lower bound	0,0207
upper bound	0,0207
Sum DIN	9

Table 3: PCDD/F recoveries

		[%]	RSD [%]
	2,3,7,8-TCDF	98	12
	1,2,3,7,8-PeCDF	100	2
	2,3,4,7,8-PeCDF	102	11
	1,2,3,4,7,8-HxCDF	87	10
	1,2,3,6,7,8-HxCDF	88	9
	2,3,4,6,7,8-HxCDF	93	7
PCDD/F 13C Recoveries [%]	1,2,3,7,8,9-HxCDF	96	7
	1,2,3,4,6,7,8-HpCDF	92	10
	1,2,3,4,7,8,9-HpCDF	85	12
	1,2,3,4,6,7,8,9-OCDF	91	8
	2,3,7,8-TCDD	89	12
	1,2,3,7,8-PeCDD	103	18
	1,2,3,4,7,8-HxCDD	95	12
	1,2,3,6,7,8-HxCDD	77	13
	1,2,3,7,8,9-HxCDD	88	8
	1,2,3,4,6,7,8-HpCDD	96	12
	1,2,3,4,6,7,8,9-OCDD	76	16

Table 4: PCB recoveries

		[%]	RSD [%]
	PCB-#28	93	4
	PCB-#52	92	14
	PCB-#101	106	7
	PCB-#153	88	5
	PCB-#138	97	4
	PCB-#180	91	6
	PCB-#81	95	5
PCB 13C Recoveries [%]	PCB-#77	100	6
	PCB-#126	93	9
	PCB-#169	89	12
	PCB-#123	100	12
	PCB-#118	95	12
	PCB-#114	102	13
	PCB-#105	96	12
	PCB-#167	83	7
	PCB-#156	85	7
	PCB-#157	83	8
	PCB-#189	85	15