Quality Control Certificate

Product: **Alumina Column**

Product No.:   **15433**

Lot No.:   **715419**

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

Description: The alumina 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 via DEva 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:	0,62	pg/column
		(crit: < 0,7 pg/column)
	dl-PCB-TEQ:	0,044	pg/column
		(crit: < 0,05 pg/column)
	Sum Indikator PCB:	7,2	pg/column
		(crit: < 100 pg/column)

| **Results Recoveries:** | PCDD/F | 79 to 120 % (crit: 70 to 120) |
| | PCB | 85 to 103 % (crit: 70 to 120) |

This is to certify that alumina column, Lot 715419, passed the required test specifications and is released for sale.

date: 12.01.2022   sign.: *T. Kehemeir*

The company LCTech GmbH is certified according to ISO 9001:2015

DEKRA Certification

Hazards:	NOT FOR HUMAN OR DRUG USE!
	The alumina column is designed and prepared for usage with the universal/standard & smart 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: Blank values of PCDD/F and PCB Table 3 & 4: 13C-Recoveries of PCDD/F and PCB
Analytics:	All the columns (n>5) have to perform a clean-up of a solvent blank (10 mL n-hexane), spiked with a 13C - labelled quantifier-standard solution with a single column method onto a DEXTech Plus system. The fractions 1 (PCB) and 2 (PCDD/F) are spiked with 13C - labelled recovery- standard solutions and evaporated with the D-EVA vacuum centrifuge. The extracts are measured with a HRMS-DFS from Thermo Fisher Scientific with a resolution of R > 10000. The HRGCs are equipped with 60 m DB5 MS columns. For PCDD/F 5µL are injected via PTV, for PCB 2µL via SSL.
Remarks:	n/a

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DEKRA
Certification

Results:

Lockmass check:

No significant disturbances, or indicators for contaminations are detected.

Blanks:

Table 1: PCDD/F blank (n=7)   *Table 2: PCB blank (n=7)*

Congeneres:	[pg/column]:
2,3,7,8-TCDF	0,05
1,2,3,7,8-PeCDF	0,08
2,3,4,7,8-PeCDF	0,14
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	<dl
1,2,3,4,6,7,8-HpCDF	0,12
1,2,3,4,7,8,9-HpCDF	<0,018
OCDF	1,34
2,3,7,8-TCDD	0,29
1,2,3,7,8-PeCDD	0,26
1,2,3,4,7,8-HxCDD	0,07
1,2,3,6,7,8-HxCDD	<dl
1,2,3,7,8,9-HxCDD	<0,027
1,2,3,4,6,7,8-HpCDD	<0,09
OCDD	0,31

TEQ (WHO 2005)	
lower bound	0,62
upper bound	0,62

Congeneres:	[pg/column]:
PCB 28	1,02
PCB 52	1,84
PCB 77	1,71
PCB 81	0,747
PCB 101	1,12
PCB 123	0,2345
PCB 118	0,68
PCB 114	0,1891
PCB 105	0,53
PCB 126	0,2667
PCB 153	1,46
PCB 138	0,59
PCB 167	0,22
PCB 156	0,76
PCB 157	0,49
PCB 169	0,571
PCB 180	0,99
PCB 189	0,808

TEQ (WHO 2005)	
lower bound	0,0443
upper bound	0,0443

Sum DIN PCB	7,2

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Results:

13C-Recoveries

Table 3: PCDD/F 13C-recoveries (n=7)

Congeneres:	13C rec [%]
2,3,7,8-TCDF	109
1,2,3,7,8-PeCDF	117
2,3,4,7,8-PeCDF	114
1,2,3,4,7,8-HxCDF	115
1,2,3,6,7,8-HxCDF	119
2,3,4,6,7,8-HxCDF	111
1,2,3,7,8,9-HxCDF	120
1,2,3,4,6,7,8-HpCDF	106
1,2,3,4,7,8,9-HpCDF	98
OCDF	93
2,3,7,8-TCDD	89
1,2,3,7,8-PeCDD	93
1,2,3,4,7,8-HxCDD	102
1,2,3,6,7,8-HxCDD	89
1,2,3,7,8,9-HxCDD	104
1,2,3,4,6,7,8-HpCDD	91
OCDD	79

Table 4: PCB 13C-recoveries (n=7)

Congeneres:	13C rec [%]
PCB 28	96
PCB 52	98
PCB 77	94
PCB 81	97
PCB 101	100
PCB 123	85
PCB 118	95
PCB 114	88
PCB 105	88
PCB 126	86
PCB 153	101
PCB 138	100
PCB 167	96
PCB 156	87
PCB 157	96
PCB 169	92
PCB 180	103
PCB 189	96

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