Quality Control Certificate

Product:	**Alumina Column**
Product No.:	**15433**
Lot No.:	**713859**

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-up on a DEXTech Plus system, spiked with recovery standard, evaporated via DEva and has been quantified with a HRGC/HRMS with a resolution of R > 10000.

Results Blank Value:	PCDD/F-TEQ:	0,07	pg/column
		(crit: < 0,7	pg/column
	dl-PCB-TEQ:	0,014	pg/column
		(crit: < 0,05	pg/column
	Sum Indikator PCB:	8,9	pg/column
		(crit: < 100	pg/column

Results Recoveries:	PCDD/F	92	to	98	%	(crit: 70	to	120)
	PCB	84	to	118	%	(crit: 70	to	120)

This is to certify that alumina column, Lot 713859, passed the required test specifications and is released for sale.

date: 09.10.2020 sign.: T. Kehemeier

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

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QC Certificate - Alumina Column - 15433 - 713859

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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Results:

Lockmass check:

No significant disturbances, or indicators for contaminations are detected.

Blanks:

Table 1: PCDD/F blank (n=9)

Congeneres:	[pg/column]:
2,3,7,8-TCDF	<0,036
1,2,3,7,8-PeCDF	<0,045
2,3,4,7,8-PeCDF	<dl
1,2,3,4,7,8-HxCDF	0,027
1,2,3,6,7,8-HxCDF	0,021
2,3,4,6,7,8-HxCDF	<0,045
1,2,3,7,8,9-HxCDF	<0,045
1,2,3,4,6,7,8-HpCDF	<dl
1,2,3,4,7,8,9-HpCDF	0,024
OCDF	<0,054
2,3,7,8-TCDD	<0,036
1,2,3,7,8-PeCDD	<0,054
1,2,3,4,7,8-HxCDD	<0,027
1,2,3,6,7,8-HxCDD	<dl
1,2,3,7,8,9-HxCDD	0,028
1,2,3,4,6,7,8-HpCDD	<dl
OCDD	<dl

TEQ (WHO 2005)	
lower bound	0,07
upper bound	0,08

Table 2: PCB blank (n=9)

Congeneres:	[pg/column]:
PCB 28	2,2
PCB 52	3,18
PCB 77	0,1
PCB 81	0,1
PCB 101	1,35
PCB 123	0,106
PCB 118	0,28
PCB 114	0,0151
PCB 105	0,16
PCB 126	0,1095
PCB 153	0,87
PCB 138	0,97
PCB 167	0,055
PCB 156	0,14
PCB 157	0,104
PCB 169	0,088
PCB 180	0,28
PCB 189	0,102

TEQ (WHO 2005)	
lower bound	0,0136
upper bound	0,0136

Sum DIN PCB	8,9

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Results:

13C-Recoveries

Table 3: PCDD/F 13C-recoveries (n=9)

Congeneres:	13C rec [%]
2,3,7,8-TCDF	94
1,2,3,7,8-PeCDF	95
2,3,4,7,8-PeCDF	92
1,2,3,4,7,8-HxCDF	96
1,2,3,6,7,8-HxCDF	98
2,3,4,6,7,8-HxCDF	98
1,2,3,7,8,9-HxCDF	95
1,2,3,4,6,7,8-HpCDF	95
1,2,3,4,7,8,9-HpCDF	96
OCDF	95
2,3,7,8-TCDD	96
1,2,3,7,8-PeCDD	95
1,2,3,4,7,8-HxCDD	94
1,2,3,6,7,8-HxCDD	97
1,2,3,7,8,9-HxCDD	95
1,2,3,4,6,7,8-HpCDD	96
OCDD	95

Table 4: PCB 13C-recoveries (n=9)

Congeneres:	13C rec [%]
PCB 28	90
PCB 52	84
PCB 77	110
PCB 81	97
PCB 101	97
PCB 123	90
PCB 118	91
PCB 114	92
PCB 105	93
PCB 126	92
PCB 153	98
PCB 138	101
PCB 167	101
PCB 156	117
PCB 157	118
PCB 169	97
PCB 180	105
PCB 189	99

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