Quality Control Certificate

Product:	**Alumina Column**
Product No.:	**15433**
Lot No.:	**714499**

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:	0,51	pg/column	
	(crit: <	0,7	pg/column
dl-PCB-TEQ:	0,027	pg/column	
	(crit: <	0,05	pg/column
Sum Indikator PCB:	14,03	pg/column	
	(crit: <	100	pg/column

Results Recoveries:

PCDD/F	84	to	119	%	(crit: 70 to 120)
PCB	84	to	107	%	(crit: 70 to 120)

This is to certify that alumina column, Lot 714499, passed the required test specifications and is released for sale.

date: 24.02.2021   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=8)

Congeneres:	[pg/column]:
2,3,7,8-TCDF	<0,036
1,2,3,7,8-PeCDF	0,15
2,3,4,7,8-PeCDF	0,21
1,2,3,4,7,8-HxCDF	<0,027
1,2,3,6,7,8-HxCDF	<dl
2,3,4,6,7,8-HxCDF	<dl
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	<0,018
OCDF	<0,054
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	0,43
1,2,3,4,7,8-HxCDD	<0,027
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
OCDD	0,11

TEQ (WHO 2005)	
lower bound	0,51
upper bound	0,53

Table 2: PCB blank (n=8)

Congeneres:	[pg/column]:
PCB 28	3,72
PCB 52	3,38
PCB 77	0,34
PCB 81	0,171
PCB 101	2,49
PCB 123	0,1169
PCB 118	0,16
PCB 114	0,2545
PCB 105	0,14
PCB 126	0,2297
PCB 153	2,67
PCB 138	1,11
PCB 167	0,391
PCB 156	0,4
PCB 157	0,129
PCB 169	0,112
PCB 180	0,27
PCB 189	0,093

TEQ (WHO 2005)	
lower bound	0,0265
upper bound	0,0265

Sum DIN PCB	14,03

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Results:

13C-Recoveries

Table 3: PCDD/F 13C-recoveries (n=8)

Congeneres:	13C rec [%]
2,3,7,8-TCDF	105
1,2,3,7,8-PeCDF	98
2,3,4,7,8-PeCDF	104
1,2,3,4,7,8-HxCDF	110
1,2,3,6,7,8-HxCDF	108
2,3,4,6,7,8-HxCDF	115
1,2,3,7,8,9-HxCDF	104
1,2,3,4,6,7,8-HpCDF	119
1,2,3,4,7,8,9-HpCDF	110
OCDF	84
2,3,7,8-TCDD	90
1,2,3,7,8-PeCDD	85
1,2,3,4,7,8-HxCDD	100
1,2,3,6,7,8-HxCDD	102
1,2,3,7,8,9-HxCDD	100
1,2,3,4,6,7,8-HpCDD	103
OCDD	84

Table 4: PCB 13C-recoveries (n=8)

Congeneres:	13C rec [%]
PCB 28	104
PCB 52	107
PCB 77	90
PCB 81	89
PCB 101	96
PCB 123	92
PCB 118	101
PCB 114	95
PCB 105	98
PCB 126	88
PCB 153	96
PCB 138	96
PCB 167	104
PCB 156	90
PCB 157	104
PCB 169	84
PCB 180	93
PCB 189	100

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