Quality Control Certificate

Product:	**Alumina Column**
Product No.:	15433
Lot No.:	**717740**

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 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:	0,24	pg/column	
	(crit: <	0,7	pg/column)
dl-PCB-TEQ:	0,0349	pg/column	
	(crit: <	0,05	pg/column)
Sum Total PCB:	37,5	pg/column	
	(crit: <	300	pg/column)

Results Recoveries:

PCDD/F	81	to	109	%	(crit:	45	to	130	%)
PCB	83	to	117	%	(crit:	45	to	130	%)

This is to certify that the Alumina Column, Lot 717740, passed the required test specifications and is released for sale.

date: 20.02.2023   sign.: _T. Kehemeir_

The company LCTech GmbH is certified according to ISO 9001

Hazards:	NOT FOR HUMAN OR DRUG USE!
	The 209 Column is designed and prepared for usage with the Alumina 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	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 default alumina plus or pure 209 method onto a DEXTech Pure or Plus system. There are 2 fractions, fraction 1 (all 209 PCB) and fraction 2 (PCDD/F). Both fractions are spiked with the corresponding 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
Remarks	n/a

Results:

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

Blanks: n=   10

Table 1: PCDD/F blank

sample amount [pg/column]		[pg/column]
	2,3,7,8-TCDF	0,11
	1,2,3,7,8-PeCDF	0,05
	2,3,4,7,8-PeCDF	<0,081
	1,2,3,4,7,8-HxCDF	<0,027
	1,2,3,6,7,8-HxCDF	0,021
	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	<0,063
	1,2,3,4,7,8,9-HpCDF	0,039
	1,2,3,4,6,7,8,9-OCDF	2,04
	2,3,7,8-TCDD	0,08
	1,2,3,7,8-PeCDD	0,1
	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	0,071
	1,2,3,4,6,7,8-HpCDD	0,19
	1,2,3,4,6,7,8,9-OCDD	1,2

Table 2: PCB blank

sample amount [pg/sample]		[pg/column]
	PCB-#28	2,51
	PCB-#52	3,46
	PCB-#101	6,17
	PCB-#153	15,37
	PCB-#138	7,05
	PCB-#180	2,956
	PCB-#81	<0,027
	PCB-#77	<dl
	PCB-#126	0,0109
	PCB-#169	<dl
	PCB-#123	0,64
	PCB-#118	3,14
	PCB-#114	0,495
	PCB-#105	1
	PCB-#167	0,43
	PCB-#156	0,736
	PCB-#157	0,34
	PCB-#189	1,173

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,24
upper bound	0,24

PCB-TEQ	[pg/column]
lower bound	0,0349
upper bound	0,0349
Sum DIN	37,5

Table 3: PCDD/F recoveries

	[%]	RSD [%]
2,3,7,8-TCDF	92	15
1,2,3,7,8-PeCDF	89	11
2,3,4,7,8-PeCDF	86	21
1,2,3,4,7,8-HxCDF	86	10
1,2,3,6,7,8-HxCDF	93	12
2,3,4,6,7,8-HxCDF	98	13
1,2,3,7,8,9-HxCDF	94	10
1,2,3,4,6,7,8-HpCDF	108	6
1,2,3,4,7,8,9-HpCDF	109	4
1,2,3,4,6,7,8,9-OCDF	106	7
2,3,7,8-TCDD	88	17
1,2,3,7,8-PeCDD	91	12
1,2,3,4,7,8-HxCDD	101	10
1,2,3,6,7,8-HxCDD	81	9
1,2,3,7,8,9-HxCDD	88	14
1,2,3,4,6,7,8-HpCDD	104	5
1,2,3,4,6,7,8,9-OCDD	95	5

(PCDD/F 13C Recoveries [%])

Table 4: PCB recoveries

	[%]	RSD [%]
PCB-#28	104	4
PCB-#52	95	7
PCB-#101	107	7
PCB-#153	103	10
PCB-#138	103	9
PCB-#180	105	15
PCB-#81	99	0
PCB-#77	105	0
PCB-#126	117	119
PCB-#169	98	0
PCB-#123	104	6
PCB-#118	101	8
PCB-#114	97	13
PCB-#105	104	9
PCB-#167	100	6
PCB-#156	90	21
PCB-#157	101	13
PCB-#189	83	28

(PCB 13C Recoveries [%])