

Quality Control Certificate

Product: **Alumina Column**
 Product No.: 15433
 Lot No.: **718310**

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:	0,16	pg/column
		(crit: <	0,7 pg/column)
	dl-PCB-TEQ:	0,0268	pg/column
		(crit: <	0,05 pg/column)
	Sum Total PCB:	17,9	pg/column
		(crit: <	300 pg/column)

Results Recoveries:	PCDD/F	81	to	120	%	(crit: 70	to	120	%)
	PCB	85	to	109	%	(crit: 70	to	120	%)

This is to certify that the Alumina Column, Lot 718310, passed the required test specifications and is released for sale.

date: 06.04.2023 sign.: T. Kehmeier

The company LCTech GmbH is certified according to ISO 9001



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Hazards:	<p>NOT FOR HUMAN OR DRUG USE!</p> <p>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.</p>
Quality Control:	<p>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.</p>
Quality Management:	<p>This product was produced using a Quality Management System registered to the ISO 9001:2015 (DEKRA)</p>
Documentation / Data Attached:	<p>table 1 & 2: blankvalues of PCDD/F and PCB table 3 & 4: 13C-Recoveries of PCDD/F and PCB</p>
Analytics	<p>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</p>
Remarks	<p>n/a</p>

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Results:

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

Blanks: n= 9

Table 1: PCDD/F blank

	[pg/column]
2,3,7,8-TCDF	0,05
1,2,3,7,8-PeCDF	0,07
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	<dl
1,2,3,6,7,8-HxCDF	<0,018
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	0,07
1,2,3,4,7,8,9-HpCDF	0,076
1,2,3,4,6,7,8,9-OCDF	0,44
2,3,7,8-TCDD	<dl
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	0,064
1,2,3,4,6,7,8-HpCDD	0,09
1,2,3,4,6,7,8,9-OCDD	1,65

Table 2: PCB blank

	[pg/column]
PCB-#28	1,25
PCB-#52	2,23
PCB-#101	2,24
PCB-#153	4,1
PCB-#138	6,06
PCB-#180	1,992
PCB-#81	<dl
PCB-#77	<dl
PCB-#126	<dl
PCB-#169	<dl
PCB-#123	0,24
PCB-#118	2,77
PCB-#114	0,237
PCB-#105	0,89
PCB-#167	0,183
PCB-#156	0,432
PCB-#157	0,18
PCB-#189	0,246

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,15
upper bound	0,16

PCB-TEQ	[pg/column]
lower bound	0,0268
upper bound	0,0268
Sum DIN	17,9

Table 3: PCDD/F recoveries

	[%]	RSD [%]	
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	97	12
	1,2,3,7,8-PeCDF	83	9
	2,3,4,7,8-PeCDF	96	11
	1,2,3,4,7,8-HxCDF	87	14
	1,2,3,6,7,8-HxCDF	92	13
	2,3,4,6,7,8-HxCDF	87	18
	1,2,3,7,8,9-HxCDF	85	24
	1,2,3,4,6,7,8-HpCDF	120	3
	1,2,3,4,7,8,9-HpCDF	102	14
	1,2,3,4,6,7,8,9-OCDF	98	11
	2,3,7,8-TCDD	91	10
	1,2,3,7,8-PeCDD	95	11
	1,2,3,4,7,8-HxCDD	88	13
	1,2,3,6,7,8-HxCDD	81	12
	1,2,3,7,8,9-HxCDD	86	14
	1,2,3,4,6,7,8-HpCDD	110	8
	1,2,3,4,6,7,8,9-OCDD	88	11

Table 4: PCB recoveries

	[%]	RSD [%]	
PCB 13C Recoveries [%]	PCB-#28	93	3
	PCB-#52	97	3
	PCB-#101	97	2
	PCB-#153	92	6
	PCB-#138	95	3
	PCB-#180	91	3
	PCB-#81	106	0
	PCB-#77	109	0
	PCB-#126	108	0
	PCB-#169	104	0
	PCB-#123	91	4
	PCB-#118	89	5
	PCB-#114	85	7
	PCB-#105	87	10
	PCB-#167	96	2
	PCB-#156	88	8
	PCB-#157	90	8
	PCB-#189	94	6