Quality Control Certificate

Product:	**Alumina Column**
Product No.:	15433
Lot No.:	**719097**

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:	0,09	pg/column	
	(crit: <	0,7	pg/column)
dl-PCB-TEQ:	0,0024	pg/column	
	(crit: <	0,05	pg/column)
Sum Total PCB:	1,9	pg/column	
	(crit: <	300	pg/column)

Results Recoveries:

PCDD/F	95	to	117	%	(crit:	70	to	120	%)
PCB	89	to	117	%	(crit:	70	to	120	%)

This is to certify that the Alumina Column, Lot 719097, passed the required test specifications and is released for sale.

date: 19.10.2023   sign.: _M.Bradis_

The company LCTech GmbH is certified according to ISO 9001

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: blankvalues of PCDD/F and PCB table 3 & 4: 13C-Recoveries of PCDD/F and PCB
Analytics	This is to certify that the Alumina Column, Lot , passed the required test specifications and is released for sale.
Remarks	n/a

Results:

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

Blanks: n=   6

Table 1: PCDD/F blank

	[pg/column]
2,3,7,8-TCDF	<dl
1,2,3,7,8-PeCDF	<dl
2,3,4,7,8-PeCDF	0,14
1,2,3,4,7,8-HxCDF	<dl
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	0,027
1,2,3,4,6,7,8,9-OCDF	0,09
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	<dl
1,2,3,4,7,8-HxCDD	<dl
1,2,3,6,7,8-HxCDD	<dl
1,2,3,7,8,9-HxCDD	<dl
1,2,3,4,6,7,8-HpCDD	<0,09
1,2,3,4,6,7,8,9-OCDD	0,39

(sample amount [pg/column])

Table 2: PCB blank

	[pg/column]
PCB-#28	0,66
PCB-#52	0,48
PCB-#101	0,33
PCB-#153	0,22
PCB-#138	0,16
PCB-#180	<0,162
PCB-#81	0,07
PCB-#77	0,0633
PCB-#126	<dl
PCB-#169	0,08
PCB-#123	<dl
PCB-#118	0,03
PCB-#114	0,046
PCB-#105	<0,027
PCB-#167	<dl
PCB-#156	<0,027
PCB-#157	0,03
PCB-#189	0,085

(sample amount [pg/sample])

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,05
upper bound	0,09

PCB-TEQ	[pg/column]
lower bound	0,0024
upper bound	0,0025
Sum DIN	1,9

Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]		[%]	RSD [%]
	2,3,7,8-TCDF	102	4
	1,2,3,7,8-PeCDF	95	5
	2,3,4,7,8-PeCDF	97	4
	1,2,3,4,7,8-HxCDF	104	6
	1,2,3,6,7,8-HxCDF	117	3
	2,3,4,6,7,8-HxCDF	111	5
	1,2,3,7,8,9-HxCDF	108	3
	1,2,3,4,6,7,8-HpCDF	110	5
	1,2,3,4,7,8,9-HpCDF	109	2
	1,2,3,4,6,7,8,9-OCDF	107	4
	2,3,7,8-TCDD	97	2
	1,2,3,7,8-PeCDD	102	4
	1,2,3,4,7,8-HxCDD	111	3
	1,2,3,6,7,8-HxCDD	98	5
	1,2,3,7,8,9-HxCDD	114	3
	1,2,3,4,6,7,8-HpCDD	108	5
	1,2,3,4,6,7,8,9-OCDD	104	3

Table 4: PCB recoveries

PCB 13C Recoveries [%]		[%]	RSD [%]
	PCB-#28	93	2
	PCB-#52	94	5
	PCB-#101	100	2
	PCB-#153	96	2
	PCB-#138	93	3
	PCB-#180	94	4
	PCB-#81	106	0
	PCB-#77	110	0
	PCB-#126	117	0
	PCB-#169	108	0
	PCB-#123	102	3
	PCB-#118	96	3
	PCB-#114	93	3
	PCB-#105	95	4
	PCB-#167	98	3
	PCB-#156	89	4
	PCB-#157	97	4
	PCB-#189	95	6