Quality Control Certificate

Product:	**EVOLUTION Alox Column**
Product No.:	20087
Lot No.:	**721861**

Storage Recommendations: Store the column at room temperature below 25°C

Description: The EVOLUTION 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:	0,13	pg/column
		(crit: < 0,70	pg/column)
	dl-PCB-TEQ:	0,0187	pg/column
		(crit: < 0,05	pg/column)
	Sum Total PCB:	11,6	pg/column
		(crit: < 300	pg/column)

Results Recoveries:	PCDD/F	89	to	107	%	(crit:	70	to	120	%)
	PCB	91	to	105	%	(crit:	70	to	120	%)

This is to certify that the EVOLUTION Alox Column, Lot 721861, passed the required test specifications and is released for sale.

date: 07.05.2025 sign.: M. Bradis

The company LCTech GmbH is certified according to ISO 9001

LCTech GmbH
Daimlerstrasse 4, 84419 Obertaufkirchen
Germany

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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 EVOLUTION Alumina Column, Lot , passed the required test specifications and is released for sale.
Remarks	n/a

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Results:

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

Blanks: n= 6

Table 1: PCDD/F blank

sample amount [pg/column]		[pg/column]
	2,3,7,8-TCDF	<0,036
	1,2,3,7,8-PeCDF	0,07
	2,3,4,7,8-PeCDF	<dl
	1,2,3,4,7,8-HxCDF	<0,027
	1,2,3,6,7,8-HxCDF	0,025
	2,3,4,6,7,8-HxCDF	<dl
	1,2,3,7,8,9-HxCDF	<dl
	1,2,3,4,6,7,8-HpCDF	0,2
	1,2,3,4,7,8,9-HpCDF	0,057
	1,2,3,4,6,7,8,9-OCDF	0,07
	2,3,7,8-TCDD	0,04
	1,2,3,7,8-PeCDD	<dl
	1,2,3,4,7,8-HxCDD	0,092
	1,2,3,6,7,8-HxCDD	0,3
	1,2,3,7,8,9-HxCDD	0,059
	1,2,3,4,6,7,8-HpCDD	0,28
	1,2,3,4,6,7,8,9-OCDD	2,53

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,1
upper bound	0,13

Table 2: PCB blank

sample amount [pg/sample]		[pg/column]
	PCB-#28	3,81
	PCB-#52	4,67
	PCB-#101	1,93
	PCB-#153	0,88
	PCB-#138	<0,261
	PCB-#180	0,342
	PCB-#81	0,41
	PCB-#77	0,26
	PCB-#126	0,07
	PCB-#169	0,383
	PCB-#123	0,06
	PCB-#118	0,44
	PCB-#114	0,256
	PCB-#105	0,29
	PCB-#167	0,357
	PCB-#156	0,467
	PCB-#157	0,35
	PCB-#189	0,218

PCB-TEQ	[pg/column]
lower bound	0,0187
upper bound	0,0187
Sum DIN	11,6

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Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]		[%]	RSD [%]
	2,3,7,8-TCDF	95	3
	1,2,3,7,8-PeCDF	96	6
	2,3,4,7,8-PeCDF	97	4
	1,2,3,4,7,8-HxCDF	96	3
	1,2,3,6,7,8-HxCDF	105	3
	2,3,4,6,7,8-HxCDF	103	2
	1,2,3,7,8,9-HxCDF	105	3
	1,2,3,4,6,7,8-HpCDF	106	3
	1,2,3,4,7,8,9-HpCDF	98	6
	1,2,3,4,6,7,8,9-OCDF	105	5
	2,3,7,8-TCDD	91	5
	1,2,3,7,8-PeCDD	104	5
	1,2,3,4,7,8-HxCDD	106	4
	1,2,3,6,7,8-HxCDD	89	3
	1,2,3,7,8,9-HxCDD	107	4
	1,2,3,4,6,7,8-HpCDD	105	5
	1,2,3,4,6,7,8,9-OCDD	97	4

Table 4: PCB recoveries

PCB 13C Recoveries [%]		[%]	RSD [%]
	PCB-#28	99	2
	PCB-#52	94	3
	PCB-#101	101	3
	PCB-#153	91	3
	PCB-#138	100	0
	PCB-#180	95	2
	PCB-#81	96	1
	PCB-#77	100	2
	PCB-#126	105	2
	PCB-#169	100	2
	PCB-#123	102	3
	PCB-#118	103	3
	PCB-#114	101	3
	PCB-#105	104	3
	PCB-#167	96	4
	PCB-#156	101	2
	PCB-#157	99	3
	PCB-#189	97	5

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