Quality Control Certificate

Product:	**EVOLUTION Universal Column**
Product No.:	20085
Lot No.:	**723355**

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

Description: The EVOLUTION Universal Column is part of a 3- or 4-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:	0,07	pg/column
		(crit: < 0,70	pg/column)
	dl-PCB-TEQ:	0,0055	pg/column
		(crit: < 0,05	pg/column)
	Sum Total PCB:	86,9	pg/column
		(crit: < 300	pg/column)

Results Recoveries:	PCDD/F	90	to	117	%	(crit:	70	to	120	%)
	PCB	78	to	102	%	(crit:	70	to	120	%)

This is to certify that the EVOLUTION Universal Column, Lot 723355, passed the required test specifications and is released for sale.

date: 04.03.2026 sign.: M. Bradis

The company LCTech GmbH is certified according to ISO 9001

LCTech GmbH
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Germany

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Hazards:	NOT FOR HUMAN OR DRUG USE! The EVOLUTION Universal Column is designed and prepared for usage with the Alumina/Florisil 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 Universal Column, Lot , passed the required test specifications and is released for sale.
Remarks	Our suppliers maintain the highest standard of quality, however due to the high temperature necessary for several steps in the production, some small charred particles may be visible within a batch of silica or filters without any effect on the clean-up.

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Results:

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

Blanks: n= 6

Table 1: PCDD/F blank

		[pg/column]
sample amount [pg/column]	2,3,7,8-TCDF	<0,036
	1,2,3,7,8-PeCDF	<0,045
	2,3,4,7,8-PeCDF	<0,081
	1,2,3,4,7,8-HxCDF	<0,027
	1,2,3,6,7,8-HxCDF	<0,018
	2,3,4,6,7,8-HxCDF	<dl
	1,2,3,7,8,9-HxCDF	<dl
	1,2,3,4,6,7,8-HpCDF	<0,063
	1,2,3,4,7,8,9-HpCDF	<dl
	1,2,3,4,6,7,8,9-OCDF	<0,054
	2,3,7,8-TCDD	<0,036
	1,2,3,7,8-PeCDD	<dl
	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	0,41
	1,2,3,4,6,7,8,9-OCDD	1,14

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,05
upper bound	0,07

Table 2: PCB blank

		[pg/column]
sample amount [pg/sample]	PCB-#28	27,81
	PCB-#52	36,92
	PCB-#101	11,27
	PCB-#153	5,74
	PCB-#138	4,48
	PCB-#180	0,68
	PCB-#81	0,11
	PCB-#77	0,9
	PCB-#126	0,0487
	PCB-#169	<0,027
	PCB-#123	0,36
	PCB-#118	5,45
	PCB-#114	0,172
	PCB-#105	1,84
	PCB-#167	0,183
	PCB-#156	0,21
	PCB-#157	0,15
	PCB-#189	0,062

PCB-TEQ	[pg/column]
lower bound	0,0055
upper bound	0,0055
Sum DIN	86,9

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Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]		[%]	RSD [%]
	2,3,7,8-TCDF	98	3
	1,2,3,7,8-PeCDF	90	2
	2,3,4,7,8-PeCDF	95	2
	1,2,3,4,7,8-HxCDF	111	2
	1,2,3,6,7,8-HxCDF	108	2
	2,3,4,6,7,8-HxCDF	108	2
	1,2,3,7,8,9-HxCDF	117	3
	1,2,3,4,6,7,8-HpCDF	113	3
	1,2,3,4,7,8,9-HpCDF	104	4
	1,2,3,4,6,7,8,9-OCDF	109	5
	2,3,7,8-TCDD	101	4
	1,2,3,7,8-PeCDD	104	3
	1,2,3,4,7,8-HxCDD	112	2
	1,2,3,6,7,8-HxCDD	94	2
	1,2,3,7,8,9-HxCDD	112	3
	1,2,3,4,6,7,8-HpCDD	108	5
	1,2,3,4,6,7,8,9-OCDD	98	3

Table 4: PCB recoveries

PCB 13C Recoveries [%]		[%]	RSD [%]
	PCB-#28	97	13
	PCB-#52	88	4
	PCB-#101	95	2
	PCB-#153	102	5
	PCB-#138	97	4
	PCB-#180	98	5
	PCB-#81	98	3
	PCB-#77	97	4
	PCB-#126	86	4
	PCB-#169	78	4
	PCB-#123	90	11
	PCB-#118	87	8
	PCB-#114	94	4
	PCB-#105	83	11
	PCB-#167	85	5
	PCB-#156	91	11
	PCB-#157	91	9
	PCB-#189	83	7

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