

Quality Control Certificate

Product: **EVOLUTION Universal Column**
Product No.: 20085
Lot No.: **721719**

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:	0,08	pg/column						
		(crit: <	0,70	pg/column)					
	dl-PCB-TEQ:	0,0134	pg/column						
		(crit: <	0,05	pg/column)					
	Sum Total PCB:	13,7	pg/column						
		(crit: <	300	pg/column)					
Results Recoveries:	PCDD/F	89	to	107	%	(crit: 70	to	120	%)
	PCB	77	to	113	%	(crit: 70	to	120	%)

This is to certify that the EVOLUTION Universal Column, Lot 721719, passed the required test specifications and is released for sale.

date: 25.03.2025 sign.: 

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 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.</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>This is to certify that the EVOLUTION Universal Column, Lot , passed the required test specifications and is released for sale.</p>
Remarks	<p>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.</p>

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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]
2,3,7,8-TCDF	<0,036
1,2,3,7,8-PeCDF	0,06
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	<0,027
1,2,3,6,7,8-HxCDF	0,019
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	<0,018
1,2,3,4,6,7,8,9-OCDF	<0,054
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	<0,054
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	0,035
1,2,3,4,6,7,8-HpCDD	<0,09
1,2,3,4,6,7,8,9-OCDD	0,55

Table 2: PCB blank

	[pg/column]
PCB-#28	4,33
PCB-#52	4,41
PCB-#101	1,86
PCB-#153	1,15
PCB-#138	1,56
PCB-#180	0,428
PCB-#81	0,08
PCB-#77	0,13
PCB-#126	0,094
PCB-#169	0,122
PCB-#123	0,86
PCB-#118	1,08
PCB-#114	0,156
PCB-#105	1,02
PCB-#167	1,744
PCB-#156	1,085
PCB-#157	1,22
PCB-#189	0,839

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,06
upper bound	0,08

PCB-TEQ	[pg/column]
lower bound	0,0134
upper bound	0,0134
Sum DIN	13,7

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Table 3: PCDD/F recoveries

		[%]	RSD [%]
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	94	3
	1,2,3,7,8-PeCDF	96	3
	2,3,4,7,8-PeCDF	92	4
	1,2,3,4,7,8-HxCDF	93	2
	1,2,3,6,7,8-HxCDF	104	3
	2,3,4,6,7,8-HxCDF	102	3
	1,2,3,7,8,9-HxCDF	102	2
	1,2,3,4,6,7,8-HpCDF	107	1
	1,2,3,4,7,8,9-HpCDF	107	3
	1,2,3,4,6,7,8,9-OCDF	107	4
	2,3,7,8-TCDD	93	5
	1,2,3,7,8-PeCDD	100	4
	1,2,3,4,7,8-HxCDD	101	2
	1,2,3,6,7,8-HxCDD	89	2
	1,2,3,7,8,9-HxCDD	105	3
	1,2,3,4,6,7,8-HpCDD	100	4
	1,2,3,4,6,7,8,9-OCDD	98	3

Table 4: PCB recoveries

		[%]	RSD [%]
PCB 13C Recoveries [%]	PCB-#28	99	4
	PCB-#52	105	4
	PCB-#101	101	4
	PCB-#153	113	8
	PCB-#138	101	5
	PCB-#180	103	5
	PCB-#81	92	3
	PCB-#77	96	3
	PCB-#126	88	6
	PCB-#169	88	7
	PCB-#123	88	6
	PCB-#118	82	13
	PCB-#114	93	4
	PCB-#105	77	9
	PCB-#167	79	17
	PCB-#156	84	13
	PCB-#157	81	16
	PCB-#189	83	13