

Quality Control Certificate

Product: **EVOLUTION Universal Column**
 Product No.: 20085
 Lot No.: **719200**

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:	0,18	pg/column						
		(crit: <	0,7	pg/column)					
	dl-PCB-TEQ:	0,0084	pg/column						
		(crit: <	0,05	pg/column)					
	Sum Total PCB:	56,5	pg/column						
		(crit: <	300	pg/column)					
Results Recoveries:	PCDD/F	70	to	93	%	(crit: 70	to	120	%)
	PCB	70	to	94	%	(crit: 70	to	120	%)

This is to certify that the EVOLUTION Universal Column, Lot 719200, passed the required test specifications and is released for sale.

date: 10.10.2023 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	<0,045
2,3,4,7,8-PeCDF	<dl
1,2,3,4,7,8-HxCDF	0,071
1,2,3,6,7,8-HxCDF	0,02
2,3,4,6,7,8-HxCDF	0,06
1,2,3,7,8,9-HxCDF	0,06
1,2,3,4,6,7,8-HpCDF	0,16
1,2,3,4,7,8,9-HpCDF	0,067
1,2,3,4,6,7,8,9-OCDF	0,06
2,3,7,8-TCDD	0,06
1,2,3,7,8-PeCDD	<0,054
1,2,3,4,7,8-HxCDD	0,227
1,2,3,6,7,8-HxCDD	0,14
1,2,3,7,8,9-HxCDD	0,058
1,2,3,4,6,7,8-HpCDD	0,38
1,2,3,4,6,7,8,9-OCDD	1,37

Table 2: PCB blank

	[pg/column]
PCB-#28	18,68
PCB-#52	21,16
PCB-#101	7,48
PCB-#153	3,71
PCB-#138	2,61
PCB-#180	2,828
PCB-#81	0,04
PCB-#77	0,365
PCB-#126	0,0676
PCB-#169	0,044
PCB-#123	1,12
PCB-#118	1,84
PCB-#114	0,263
PCB-#105	1,31
PCB-#167	0,67
PCB-#156	1,332
PCB-#157	0,9
PCB-#189	2,378

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,17
upper bound	0,18

PCB-TEQ	[pg/column]
lower bound	0,0084
upper bound	0,0084
Sum DIN	56,5

Table 3: PCDD/F recoveries

	[%]	RSD [%]	
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	72	16
	1,2,3,7,8-PeCDF	70	11
	2,3,4,7,8-PeCDF	76	12
	1,2,3,4,7,8-HxCDF	81	12
	1,2,3,6,7,8-HxCDF	89	13
	2,3,4,6,7,8-HxCDF	83	15
	1,2,3,7,8,9-HxCDF	79	15
	1,2,3,4,6,7,8-HpCDF	85	15
	1,2,3,4,7,8,9-HpCDF	82	17
	1,2,3,4,6,7,8,9-OCDF	85	15
	2,3,7,8-TCDD	70	15
	1,2,3,7,8-PeCDD	73	14
	1,2,3,4,7,8-HxCDD	93	11
	1,2,3,6,7,8-HxCDD	73	16
	1,2,3,7,8,9-HxCDD	84	17
	1,2,3,4,6,7,8-HpCDD	80	15
	1,2,3,4,6,7,8,9-OCDD	80	15

Table 4: PCB recoveries

	[%]	RSD [%]	
PCB 13C Recoveries [%]	PCB-#28	81	5
	PCB-#52	73	10
	PCB-#101	84	4
	PCB-#153	80	6
	PCB-#138	83	8
	PCB-#180	91	2
	PCB-#81	70	13
	PCB-#77	72	14
	PCB-#126	73	17
	PCB-#169	72	18
	PCB-#123	93	5
	PCB-#118	89	6
	PCB-#114	94	5
	PCB-#105	91	5
	PCB-#167	84	6
	PCB-#156	90	5
	PCB-#157	91	4
	PCB-#189	90	4