

Quality Control Certificate

Product: **EVOLUTION Universal Column**
Product No.: 20085
Lot No.: **724086**

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:	0,21	pg/column						
		(crit: <	0,70	pg/column)					
	dl-PCB-TEQ:	0,0058	pg/column						
		(crit: <	0,05	pg/column)					
	Sum Total PCB:	53,7	pg/column						
		(crit: <	300	pg/column)					
Results Recoveries:	PCDD/F	76	to	96	%	(crit: 70	to	120	%)
	PCB	74	to	91	%	(crit: 70	to	120	%)

This is to certify that the EVOLUTION Universal Column, Lot 724086, passed the required test specifications and is released for sale.

date: 21.08.2026 sign.: T. Kehmair

The company LCTech GmbH is certified according to ISO 9001



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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]
2,3,7,8-TCDF	0,05
1,2,3,7,8-PeCDF	0,07
2,3,4,7,8-PeCDF	0,11
1,2,3,4,7,8-HxCDF	0,046
1,2,3,6,7,8-HxCDF	0,034
2,3,4,6,7,8-HxCDF	<0,045
1,2,3,7,8,9-HxCDF	<0,045
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	0,11
1,2,3,7,8-PeCDD	0,08
1,2,3,4,7,8-HxCDD	<dl
1,2,3,6,7,8-HxCDD	0,17
1,2,3,7,8,9-HxCDD	<0,027
1,2,3,4,6,7,8-HpCDD	0,13
1,2,3,4,6,7,8,9-OCDD	0,49

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,2
upper bound	0,21

Table 2: PCB blank

	[pg/column]
PCB-#28	32,66
PCB-#52	16,47
PCB-#101	2,68
PCB-#153	0,92
PCB-#138	0,72
PCB-#180	0,288
PCB-#81	0,13
PCB-#77	0,308
PCB-#126	0,0769
PCB-#169	<0,027
PCB-#123	0,2
PCB-#118	1,37
PCB-#114	0,109
PCB-#105	0,5
PCB-#167	0,677
PCB-#156	0,227
PCB-#157	0,19
PCB-#189	0,213

PCB-TEQ	[pg/column]
lower bound	0,0058
upper bound	0,0058
Sum DIN	53,7

Table 3: PCDD/F recoveries

		[%]	RSD [%]
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	91	3
	1,2,3,7,8-PeCDF	89	3
	2,3,4,7,8-PeCDF	90	3
	1,2,3,4,7,8-HxCDF	89	3
	1,2,3,6,7,8-HxCDF	94	4
	2,3,4,6,7,8-HxCDF	95	3
	1,2,3,7,8,9-HxCDF	95	4
	1,2,3,4,6,7,8-HpCDF	93	3
	1,2,3,4,7,8,9-HpCDF	87	4
	1,2,3,4,6,7,8,9-OCDF	95	5
	2,3,7,8-TCDD	88	3
	1,2,3,7,8-PeCDD	85	3
	1,2,3,4,7,8-HxCDD	96	4
	1,2,3,6,7,8-HxCDD	80	3
	1,2,3,7,8,9-HxCDD	92	3
	1,2,3,4,6,7,8-HpCDD	87	3
	1,2,3,4,6,7,8,9-OCDD	76	3

Table 4: PCB recoveries

		[%]	RSD [%]
PCB 13C Recoveries [%]	PCB-#28	87	3
	PCB-#52	84	3
	PCB-#101	87	3
	PCB-#153	85	2
	PCB-#138	88	1
	PCB-#180	84	1
	PCB-#81	88	7
	PCB-#77	91	7
	PCB-#126	85	6
	PCB-#169	82	6
	PCB-#123	85	2
	PCB-#118	80	3
	PCB-#114	88	1
	PCB-#105	82	3
	PCB-#167	74	4
	PCB-#156	82	3
	PCB-#157	82	4
	PCB-#189	77	3