

Quality Control Certificate

Product: EVOLUTION Universal Column
Product No.: 20085
Lot No.: 716713

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 for the sample cleanup of environmental-, food- / feed- and similar matrices. It is designed for the analysis of polychlorinated dibenzo-p-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) and polychlorinated biphenyl (PCB) congeners with the DEXTech systems from LCTech GmbH

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 via 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:	0,2	pg/column
	(crit: <	0,7 pg/column)
dl-PCB-TEQ:	0,005	pg/column
	(crit: <	0,05 pg/column)
Sum Indikator PCB:	0,3	pg/column
	(crit: <	100 pg/column)

Results Recoveries:

PCDD/F	70	to	103	%	(crit: 70 to 120)
PCB	71	to	110	%	(crit: 70 to 120)

This is to certify that the 20085, Lot 716713, passed the required test specifications and is released for sale.

date: 30.08.2022 sign.: _____

T. Kehmeier

The company LCTech GmbH is certified according to ISO 9001:2015



Hazards: NOT FOR HUMAN OR DRUG USE!

The EVOLUTION Universal Column is designed and prepared for usage with the Alumina/Florisil 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: Blank values of PCDD/F and PCB
Table 3 & 4: 13C-Recoveries of PCDD/F and PCB

Analytcs: All the columns (n>5) have to perform a clean-up of a solvent blank (10 mL n-hexane), spiked with a 13C - labelled quantifier-standard solution with a single column method onto a DEXTech Plus system. The fractions 1 (PCB) and 2 (PCDD/F) are spiked with 13C - labelled recovery- standard solutions and evaporated with the D-EVA vacuum centrifuge. The extracts are measured with a HRMS-DFS from Thermo Fisher Scientific with a resolution of R > 10000. The HRGCs are equipped with 60 m DB5 MS columns. For PCDD/F 5µL are injected via PTV, for PCB 2µL via SSL.

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:

Table 1: PCDD/F blank (n=6)

Congeneres:	[pg/column]:
2,3,7,8-TCDF	0,07
1,2,3,7,8-PeCDF	0,06
2,3,4,7,8-PeCDF	0,15
1,2,3,4,7,8-HxCDF	<0,027
1,2,3,6,7,8-HxCDF	<dl
2,3,4,6,7,8-HxCDF	0,08
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
OCDF	0,27
2,3,7,8-TCDD	0,05
1,2,3,7,8-PeCDD	0,07
1,2,3,4,7,8-HxCDD	0,057
1,2,3,6,7,8-HxCDD	<0,108
1,2,3,7,8,9-HxCDD	0,048
1,2,3,4,6,7,8-HpCDD	0,14
OCDD	0,94

TEQ (WHO 2005)	
lower bound	0,2
upper bound	0,2

Table 2: PCB blank (n=6)

Congeneres:	[pg/column]:
PCB 28	<0,153
PCB 52	<0,144
PCB 77	0,24
PCB 81	0,053
PCB 101	<dl
PCB 123	0,0155
PCB 118	<0,108
PCB 114	0,012
PCB 105	<0,081
PCB 126	0,0444
PCB 153	<dl
PCB 138	<dl
PCB 167	<0,027
PCB 156	<dl
PCB 157	<0,018
PCB 169	<0,027
PCB 180	<dl
PCB 189	0,022

TEQ (WHO 2005)	
lower bound	0,005
upper bound	0,005

Sum DIN PCB	0,3
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Results:

13C-Recoveries

Table 3: PCDD/F 13C-recoveries (n=6)

Congeneres:	13C rec [%]
2,3,7,8-TCDF	88
1,2,3,7,8-PeCDF	88
2,3,4,7,8-PeCDF	81
1,2,3,4,7,8-HxCDF	77
1,2,3,6,7,8-HxCDF	85
2,3,4,6,7,8-HxCDF	70
1,2,3,7,8,9-HxCDF	70
1,2,3,4,6,7,8-HpCDF	103
1,2,3,4,7,8,9-HpCDF	87
OCDF	74
2,3,7,8-TCDD	86
1,2,3,7,8-PeCDD	102
1,2,3,4,7,8-HxCDD	80
1,2,3,6,7,8-HxCDD	70
1,2,3,7,8,9-HxCDD	79
1,2,3,4,6,7,8-HpCDD	89
OCDD	74

Table 4: PCB 13C-recoveries (n=6)

Congeneres:	13C rec [%]
PCB 28	96
PCB 52	110
PCB 77	86
PCB 81	91
PCB 101	100
PCB 123	82
PCB 118	81
PCB 114	93
PCB 105	76
PCB 126	99
PCB 153	103
PCB 138	99
PCB 167	82
PCB 156	82
PCB 157	71
PCB 169	108
PCB 180	99
PCB 189	76

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