Quality Control Certificate

Product:	**209PCB**
Product No.:	20325
Lot No.:	**723773**

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

Description: The 209PCB Column is part of a 3-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 all 209 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:	0,05	pg/column	(crit: 0,7 pg/column)
	dl-PCB-TEQ:	0,0063	pg/column	(crit: 0,05 pg/column)
	Sum total PCB:	83,9	pg/column	(crit: 300 pg/column)

Results Recoveries:	PCDD/F	84	to	114	%	(crit:	45	to	130	%)
	PCB	64	to	119	%	(crit:	45	to	130	%)

This is to certify that the 209PCB, Lot 20325, passed the required test specifications and is released for sale.

date: 11.06.2026 sign.: M. Brandis

Michael Brandis

The company LCTech GmbH is certified according to ISO 9001

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Hazards:	NOT FOR HUMAN OR DRUG USE! The 209 Column is designed and prepared for usage with the Alumina 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	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 default alumina plus or pure 209 method onto a DEXTech Pure or Plus system. There are 2 fractions, fraction 1 (all 209 PCB) and fraction 2 (PCDD/F). Both fractions are spiked with the corresponding 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 RTX-Dio2 Columns. For PCDD/F 5 µL are injected via PTV, for PCB 2 µL 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.

Table 1: PCB recoveries

PCB 13C Recoveries [%]	[%]	RSD [%]
PCB#1L	87	5
PCB#3L	73	3
PCB#4L	74	11
PCB#8L	87	1
PCB#15L	92	1
PCB#19L	98	2
PCB#28L	91	2
PCB#54L	108	2
PCB#52L	111	2
PCB#70L	116	1
PCB#81L	119	1
PCB#77L	118	1
PCB#104L	97	1
PCB#95LL	87	1
PCB#101L	87	1
PCB#123L	91	1
PCB#118L	88	2
PCB#114L	91	2
PCB#105L	93	2
PCB#126L	109	2
PCB#155L	89	2
PCB#153L	86	1
PCB#138L	86	1
PCB#167L	88	1
PCB#156L	93	1
PCB#157L	93	1
PCB#169L	96	2
PCB#180L	64	3
PCB#170L	101	1
PCB#188L	83	1
PCB#189L	89	3
PCB#202L	84	3
PCB#205L	84	1
PCB#208L	75	1
PCB#209L	86	1

Table 2: PCB blank

native amount	[pg/column]
PCB#1	0,3632
PCB#3	0,2733
PCB#10/4	0,1778
PCB#8/5	0,045
PCB#15	0,6208
PCB#19	0,5287
PCB#28	4,0858
PCB#54	0,5252
PCB#52/69	1,3922
PCB#70	1,6397
PCB#81	0,102
PCB#77	0,1878
PCB#104	0,0335
PCB#98/95/88	1,34
PCB#101	0,6123
PCB#123	0,092
PCB#118	0,5835
PCB#114	0,084
PCB#105	0,2933
PCB#126	0,1975
PCB#155	0,0738
PCB#153	0,4618
PCB#138	0,2733
PCB#167	0,0923
PCB#156	0,1338
PCB#157	0,1072
PCB#169	0,2425
PCB#180	0,1992
PCB#170	0,0833
PCB#188	0,022
PCB#189	0,0858
PCB#202	0,0327
PCB#205	0,1125
PCB#208	0,0467
PCB#209	0,12

Blanks: n = 6

PCB-TEQ	[pg/column]
lower bound	0,0063
upper bound	0,0063
Sum DIN	6

Grade of chlorination	[pg/column]
sum mono	0,8983
sum di	14,6972
sum tri	32,5292
sum tetra	19,515
sum penta	8,6295
sum hexa	4,7398
sum hepta	1,9232
sum octa	0,6317
sum nona	0,1755
sum deca	0,12
sum total	83,8593

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Blanks: n = 6

Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]	[%]
2,3,7,8-TCDF	84
1,2,3,7,8-PeCDF	84
2,3,4,7,8-PeCDF	87
1,2,3,4,7,8-HxCDF	89
1,2,3,6,7,8-HxCDF	96
2,3,4,6,7,8-HxCDF	104
1,2,3,7,8,9-HxCDF	105
1,2,3,4,6,7,8-HpCDF	108
1,2,3,4,7,8,9-HpCDF	96
1,2,3,4,6,7,8,9-OCDF	91
2,3,7,8-TCDD	85
1,2,3,7,8-PeCDD	85
1,2,3,4,7,8-HxCDD	114
1,2,3,6,7,8-HxCDD	95
1,2,3,7,8,9-HxCDD	112
1,2,3,4,6,7,8-HpCDD	97
1,2,3,4,6,7,8,9-OCDD	85

Table4: PCDD/F blank

native amount	[pg/column]
2,3,7,8-TCDF	<dl
1,2,3,7,8-PeCDF	<dl
2,3,4,7,8-PeCDF	<dl
1,2,3,4,7,8-HxCDF	<dl
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	<dl
1,2,3,4,7,8,9-HpCDF	<dl
1,2,3,4,6,7,8,9-OCDF	<dl
2,3,7,8-TCDD	<0,036
1,2,3,7,8-PeCDD	<0,054
1,2,3,4,7,8-HxCDD	<dl
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	0,1
1,2,3,4,6,7,8,9-OCDD	0,45

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,05
upper bound	0,06

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