Quality Control Certificate

Product:	**209PCB**
Product No.:	20325
Lot No.:	**722736**

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:	0,1	pg/column	(crit: 0,7 pg/column)
	dl-PCB-TEQ:	0,0279	pg/column	(crit: 0,05 pg/column)
	Sum total PCB:	76,6	pg/column	(crit: 900 pg/column)

Results Recoveries:	PCDD/F	85	to	113	%	(crit:	45	to	130	%)
	PCB	63	to	89	%	(crit:	45	to	130	%)

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

sign.: T. Kehemeier

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 DB5 MS Columns.
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 Florisil or filters without any effect on the clean-up.

Results:

Lockmass check: No significant disturbances, or indicators for contaminations are detected.

Table 1: PCB recoveries

PCB 13C Recoveries [%]	[%]
PCB#1L	68
PCB#3L	73
PCB#4L	72
PCB#8L	72
PCB#15L	75
PCB#19L	74
PCB#28L	84
PCB#54L	74
PCB#52L	71
PCB#70L	70
PCB#81L	73
PCB#77L	68
PCB#104L	67
PCB#95LL	69
PCB#101L	68
PCB#123L	73
PCB#118L	72
PCB#114L	75
PCB#105L	74
PCB#126L	89
PCB#155L	68
PCB#153L	73
PCB#138L	72
PCB#167L	72
PCB#156L	75
PCB#157L	74
PCB#169L	84
PCB#180L	74
PCB#170L	71
PCB#188L	70
PCB#189L	73
PCB#202L	68
PCB#205L	67
PCB#208L	69
PCB#209L	68

Table 2: PCB blank

native amount	[pg/column]
PCB#1	0,3368
PCB#3	0,3268
PCB#4	1,7272
PCB#8/5	1,6782
PCB#15	0,6695
PCB#19	0,7573
PCB#28	4,398
PCB#54	0,1335
PCB#52/69	1,6043
PCB#70	0,6235
PCB#81	0,126
PCB#77	0,1935
PCB#104	0,0945
PCB#102/93/98/9	0,319
PCB#101	0,4058
PCB#123	0,2813
PCB#118	0,2027
PCB#114	0,0768
PCB#105	0,1087
PCB#126	0,2128
PCB#155	0,1435
PCB#153	0,4312
PCB#138	0,2577
PCB#167	0,1307
PCB#156	0,2028
PCB#157	0,1428
PCB#169	0,2152
PCB#180	0,1898
PCB#170	0,1772
PCB#188	0,0222
PCB#189	0,271
PCB#202	0,1762
PCB#205	0,1195
PCB#208	0,1825
PCB#209	0,1687

Blanks: n = 6

PCB-TEQ	[pg/column]
lower bound	0,0279
upper bound	0,0279
Sum DIN	7,3

Grade of chlorination	[pg/column]
sum mono	0,891
sum di	10,9217
sum tri	36,1678
sum tetra	11,5918
sum penta	5,6287
sum hexa	6,0073
sum hepta	3,1058
sum octa	1,6582
sum nona	0,4843
sum deca	0,1687
sum total*	76,6253

* crit sum total: <900 pg/column

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Blanks: n = 6

Table 3: PCDD/F recoveries

PCDD/F 13C Recoveries [%]		[%]
	2,3,7,8-TCDF	91
	1,2,3,7,8-PeCDF	88
	2,3,4,7,8-PeCDF	95
	1,2,3,4,7,8-HxCDF	97
	1,2,3,6,7,8-HxCDF	104
	2,3,4,6,7,8-HxCDF	104
	1,2,3,7,8,9-HxCDF	103
	1,2,3,4,6,7,8-HpCDF	108
	1,2,3,4,7,8,9-HpCDF	94
	1,2,3,4,6,7,8,9-OCDF	102
	2,3,7,8-TCDD	85
	1,2,3,7,8-PeCDD	90
	1,2,3,4,7,8-HxCDD	109
	1,2,3,6,7,8-HxCDD	91
	1,2,3,7,8,9-HxCDD	113
	1,2,3,4,6,7,8-HpCDD	102
	1,2,3,4,6,7,8,9-OCDD	102

Table4: PCDD/F blank

native amount		[pg/column]
	2,3,7,8-TCDF	0,05
	1,2,3,7,8-PeCDF	<0,045
	2,3,4,7,8-PeCDF	<0,081
	1,2,3,4,7,8-HxCDF	<0,027
	1,2,3,6,7,8-HxCDF	<0,018
	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	0,021
	1,2,3,4,6,7,8,9-OCDF	<0,054
	2,3,7,8-TCDD	<0,036
	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	<0,027
	1,2,3,4,6,7,8-HpCDD	0,1
	1,2,3,4,6,7,8,9-OCDD	0,43

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,1
upper bound	0,1

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