

Quality Control Certificate

Product: **209PCB**
 Product No.: 20325
 Lot No.: **724087**

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:	0,0043	pg/column	(crit: 0,7 pg/column)
dl-PCB-TEQ:	0,0027	pg/column	(crit: 0,05 pg/column)
Sum total PCB:	143,3	pg/column	(crit: 300 pg/column)

Results Recoveries:

PCDD/F	73	to	111	%	(crit: 45	to	130	%)
PCB	70	to	113	%	(crit: 45	to	130	%)

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

date: 08.10.2026

sign.: 
 Michael Brandis

The company LCTech GmbH is certified according to ISO 9001

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.

Results:

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

Table 1: PCB recoveries

	[%]	RSD [%]
PCB#1L	84	9
PCB#3L	70	4
PCB#4L	77	13
PCB#8L	91	1
PCB#15L	95	2
PCB#19L	91	2
PCB#28L	100	2
PCB#54L	97	3
PCB#52L	100	3
PCB#70L	107	3
PCB#81L	113	3
PCB#77L	106	4
PCB#104L	91	2
PCB#95LL	91	3
PCB#101L	93	2
PCB#123L	94	2
PCB#118L	94	2
PCB#114L	95	3
PCB#105L	96	3
PCB#126L	112	6
PCB#155L	90	6
PCB#153L	94	5
PCB#138L	93	5
PCB#167L	93	3
PCB#156L	94	2
PCB#157L	95	4
PCB#169L	101	4
PCB#180L	92	3
PCB#170L	93	4
PCB#188L	89	6
PCB#189L	95	4
PCB#202L	86	1
PCB#205L	88	2
PCB#208L	76	1
PCB#209L	91	3

Table 2: PCB blank

	[pg/column]
PCB#1	0,4553
PCB#3	0,3547
PCB#10/4	0,6865
PCB#8/5	0,978
PCB#15	1,8618
PCB#19	1,0728
PCB#28	7,526
PCB#54	0,6473
PCB#52/69	2,533
PCB#70	2,7538
PCB#81	0,0463
PCB#77	0,0713
PCB#104	0,0027
PCB#98/95/88	2,2112
PCB#101	1,2518
PCB#123	0,027
PCB#118	0,8048
PCB#114	0,0057
PCB#105	0,2792
PCB#126	0,0168
PCB#155	0,0122
PCB#153	0,7012
PCB#138	0,4063
PCB#167	0,011
PCB#156	0,01
PCB#157	0,0033
PCB#169	0,0332
PCB#180	0,2343
PCB#170	0,1575
PCB#188	0,002
PCB#189	0,0073
PCB#202	0,0023
PCB#205	0,0075
PCB#208	0,0055
PCB#209	0,0027

Blanks: n = 6

	[pg/column]
PCB-TEQ	
lower bound	0,0027
upper bound	0,0027
Sum DIN	18,7

	[pg/column]
Grade of chlorination	
sum mono	1,0478
sum di	36,6498
sum tri	60,4842
sum tetra	30,7208
sum penta	9,668
sum hexa	3,7157
sum hepta	0,7805
sum octa	0,1818
sum nona	0,0113
sum deca	0,0027
sum total	143,2627

Blanks:

n = 6

Table 3: PCDD/F recoveries

	[%]
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF
	86
	1,2,3,7,8-PeCDF
	76
	2,3,4,7,8-PeCDF
	79
	1,2,3,4,7,8-HxCDF
	103
	1,2,3,6,7,8-HxCDF
	96
	2,3,4,6,7,8-HxCDF
	104
	1,2,3,7,8,9-HxCDF
	96
	1,2,3,4,6,7,8-HpCDF
	101
	1,2,3,4,7,8,9-HpCDF
	80
	1,2,3,4,6,7,8,9-OCDF
	80
	2,3,7,8-TCDD
	79
	1,2,3,7,8-PeCDD
	77
	1,2,3,4,7,8-HxCDD
	111
	1,2,3,6,7,8-HxCDD
	92
	1,2,3,7,8,9-HxCDD
	94
	1,2,3,4,6,7,8-HpCDD
	92
	1,2,3,4,6,7,8,9-OCDD
	73

Table 4: PCDD/F blank

	[pg/column]
native amount	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
	<0,027
	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
	<0,063
	1,2,3,4,7,8,9-HpCDF
	<dl
	1,2,3,4,6,7,8,9-OCDF
	<dl
	2,3,7,8-TCDD
	<dl
	1,2,3,7,8-PeCDD
	<dl
	1,2,3,4,7,8-HxCDD
	<dl
	1,2,3,6,7,8-HxCDD
	<dl
	1,2,3,7,8,9-HxCDD
	<dl
	1,2,3,4,6,7,8-HpCDD
	<0,09
	1,2,3,4,6,7,8,9-OCDD
	0,35

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,0043
upper bound	0,05