

Quality Control Certificate

Product: **Smart Column**
Product No.: 19513
Lot No.: 717219

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

Description: The Smart 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 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:	0,15	pg/column	(crit: < 0,7	pg/column)
dl-PCB-TEQ:	0,04	pg/column	(crit: < 0,05	pg/column)
Sum Indikator PCB:	15,9	pg/column	(crit: < 100	pg/column)

Results Recoveries:

PCDD/F	89	to 119	%	(crit: 70	to 120	%)
PCB	79	to 103	%	(crit: 70	to 120	%)

This is to certify that the Smart Column, Lot 19513, passed the required test specifications and is released for sale.

date: 07.10.2022 sign.: T. Keshmeir

The company LCTech GmbH is certified according to ISO 9001

Hazards:	<p>NOT FOR HUMAN OR DRUG USE!</p> <p>The Smart 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.</p>
Quality Control:	<p>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.</p>
Quality Management:	<p>This product was produced using a Quality Management System registered to the ISO 9001:2015 (DEKRA)</p>
Documentation / Data Attached:	<p>table 1 & 2: blankvalues of PCDD/F and PCB table 3 & 4: 13C-Recoveries of PCDD/F and PCB</p>
Analytics	<p>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.</p>
Remarks	<p>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.</p>

Results:

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

Blanks: n= 9

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	<0,081
1,2,3,4,7,8-HxCDF	0,043
1,2,3,6,7,8-HxCDF	0,023
2,3,4,6,7,8-HxCDF	<0,045
1,2,3,7,8,9-HxCDF	0,05
1,2,3,4,6,7,8-HpCDF	<0,063
1,2,3,4,7,8,9-HpCDF	0,033
1,2,3,4,6,7,8,9-OCDF	<0,054
2,3,7,8-TCDD	0,05
1,2,3,7,8-PeCDD	<0,054
1,2,3,4,7,8-HxCDD	0,084
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	0,34

Table 2: PCB blank

	[pg/column]
PCB-#28	3,45
PCB-#52	4,14
PCB-#101	2,27
PCB-#153	2,3
PCB-#138	1,71
PCB-#180	2,031
PCB-#81	0,13
PCB-#77	0,194
PCB-#126	0,2973
PCB-#169	0,289
PCB-#123	1,57
PCB-#118	2,4
PCB-#114	1,423
PCB-#105	1,87
PCB-#167	1,557
PCB-#156	1,671
PCB-#157	1,34
PCB-#189	1,972

PCDD/F TEQ (2005)	[pg/column]
lower bound	0,15
upper bound	0,15

PCB-TEQ	[pg/column]
lower bound	0,0389
upper bound	0,0389
Sum DIN	15,9

Table 3: PCDD/F recoveries

	[%]	RSD [%]	
PCDD/F 13C Recoveries [%]	2,3,7,8-TCDF	105	7
	1,2,3,7,8-PeCDF	100	5
	2,3,4,7,8-PeCDF	100	6
	1,2,3,4,7,8-HxCDF	94	8
	1,2,3,6,7,8-HxCDF	103	5
	2,3,4,6,7,8-HxCDF	99	10
	1,2,3,7,8,9-HxCDF	108	9
	1,2,3,4,6,7,8-HpCDF	113	8
	1,2,3,4,7,8,9-HpCDF	119	7
	1,2,3,4,6,7,8,9-OCDF	112	5
	2,3,7,8-TCDD	96	9
	1,2,3,7,8-PeCDD	99	11
	1,2,3,4,7,8-HxCDD	106	13
	1,2,3,6,7,8-HxCDD	89	8
	1,2,3,7,8,9-HxCDD	112	6
	1,2,3,4,6,7,8-HpCDD	107	9
	1,2,3,4,6,7,8,9-OCDD	108	11

Table 4: PCB recoveries

	[%]	RSD [%]	
PCB 13C Recoveries [%]	PCB-#28	87	5
	PCB-#52	89	5
	PCB-#101	94	6
	PCB-#153	93	11
	PCB-#138	94	5
	PCB-#180	96	4
	PCB-#81	96	4
	PCB-#77	103	6
	PCB-#126	99	8
	PCB-#169	96	7
	PCB-#123	84	7
	PCB-#118	79	9
	PCB-#114	96	9
	PCB-#105	85	8
	PCB-#167	81	9
	PCB-#156	84	10
	PCB-#157	81	14
	PCB-#189	100	15