# Quality Control Certificate

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|---|---|
| Product: | **EVOLUTION Universal Column** |
| Product No.: | 20085 |
| **Lot No.:** | **723284** |

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 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: | 0,06 | pg/column |
| | | (crit: < 0,70 | pg/column) |
| | dl-PCB-TEQ: | 0,0044 | pg/column |
| | | (crit: < 0,05 | pg/column) |
| | Sum Total PCB: | 15,3 | pg/column |
| | | (crit: < 300 | pg/column) |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Results Recoveries: | PCDD/F | 72 | to | 108 | % | (crit: | 70 | to | 120 | %) |
| | PCB | 74 | to | 108 | % | (crit: | 70 | to | 120 | %) |

This is to certify that the EVOLUTION Universal Column, Lot 723284, passed the required test specifications and is released for sale.

date: 22.01.2026 sign.: M. Brachs

The company LCTech GmbH is certified according to ISO 9001

**LCTech GmbH**
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Germany

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|---|---|
| Hazards: | NOT FOR HUMAN OR DRUG USE!<br><br>The EVOLUTION Universal 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. |
| 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<br>table 3 & 4: 13C-Recoveries of PCDD/F and PCB |
| Analytics | This is to certify that the EVOLUTION Universal Column, Lot , passed the required test specifications and is released for sale. |
| 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: n= 6

*Table 1: PCDD/F blank*

| | | [pg/column] |
|---|---|---|
| sample amount [pg/column] | 2,3,7,8-TCDF | <0,036 |
| | 1,2,3,7,8-PeCDF | <0,045 |
| | 2,3,4,7,8-PeCDF | <dl |
| | 1,2,3,4,7,8-HxCDF | <dl |
| | 1,2,3,6,7,8-HxCDF | <dl |
| | 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 | <dl |
| | 1,2,3,4,7,8-HxCDD | <dl |
| | 1,2,3,6,7,8-HxCDD | <0,108 |
| | 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 | 0,5 |

| PCDD/F TEQ (2005) | [pg/column] |
|---|---|
| lower bound | 0,03 |
| upper bound | 0,06 |

*Table 2: PCB blank*

| | | [pg/column] |
|---|---|---|
| sample amount [pg/sample] | PCB-#28 | 6,47 |
| | PCB-#52 | 5,39 |
| | PCB-#101 | 1,9 |
| | PCB-#153 | 0,88 |
| | PCB-#138 | 0,68 |
| | PCB-#180 | <0,18 |
| | PCB-#81 | 0,04 |
| | PCB-#77 | 0,308 |
| | PCB-#126 | 0,0354 |
| | PCB-#169 | 0,028 |
| | PCB-#123 | 0,01 |
| | PCB-#118 | 0,54 |
| | PCB-#114 | 0,004 |
| | PCB-#105 | <0,081 |
| | PCB-#167 | <0,027 |
| | PCB-#156 | <0,126 |
| | PCB-#157 | 0,03 |
| | PCB-#189 | 0,052 |

| PCB-TEQ | [pg/column] |
|---|---|
| lower bound | 0,0044 |
| upper bound | 0,0044 |
| Sum DIN | 15,3 |

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*Table 3: PCDD/F recoveries*

| PCDD/F 13C Recoveries [%] | [%] | RSD [%] |
|---|---|---|
| 2,3,7,8-TCDF | 92 | 3 |
| 1,2,3,7,8-PeCDF | 108 | 7 |
| 2,3,4,7,8-PeCDF | 99 | 4 |
| 1,2,3,4,7,8-HxCDF | 95 | 2 |
| 1,2,3,6,7,8-HxCDF | 102 | 2 |
| 2,3,4,6,7,8-HxCDF | 93 | 2 |
| 1,2,3,7,8,9-HxCDF | 98 | 3 |
| 1,2,3,4,6,7,8-HpCDF | 108 | 3 |
| 1,2,3,4,7,8,9-HpCDF | 92 | 3 |
| 1,2,3,4,6,7,8,9-OCDF | 73 | 4 |
| 2,3,7,8-TCDD | 92 | 3 |
| 1,2,3,7,8-PeCDD | 96 | 4 |
| 1,2,3,4,7,8-HxCDD | 98 | 2 |
| 1,2,3,6,7,8-HxCDD | 84 | 2 |
| 1,2,3,7,8,9-HxCDD | 102 | 3 |
| 1,2,3,4,6,7,8-HpCDD | 94 | 2 |
| 1,2,3,4,6,7,8,9-OCDD | 72 | 2 |

*Table 4: PCB recoveries*

| PCB 13C Recoveries [%] | [%] | RSD [%] |
|---|---|---|
| PCB-#28 | 88 | 2 |
| PCB-#52 | 87 | 3 |
| PCB-#101 | 89 | 3 |
| PCB-#153 | 91 | 2 |
| PCB-#138 | 84 | 3 |
| PCB-#180 | 98 | 3 |
| PCB-#81 | 99 | 3 |
| PCB-#77 | 100 | 4 |
| PCB-#126 | 104 | 5 |
| PCB-#169 | 108 | 6 |
| PCB-#123 | 93 | 5 |
| PCB-#118 | 85 | 7 |
| PCB-#114 | 92 | 2 |
| PCB-#105 | 74 | 6 |
| PCB-#167 | 79 | 10 |
| PCB-#156 | 91 | 5 |
| PCB-#157 | 91 | 8 |
| PCB-#189 | 88 | 6 |

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