Fast and Flexible Sample Preparation in Dioxin and PCB Analysis through Automation

DEXTech +

Sample Preparation Done by Specialists

The automated DEXTech Plus sample preparation system for dioxin and PCB analysis cleans quickly and flexibly all kinds of extracts:

- food and feed samples, such as fish, meat, fish oil, eggs, vegetable oils and feed mixtures
- environmental samples, such as soil, sludge, sediments
- biological matrices, for example blood.

„Greener Technology"
- Low solvent consumption
- Little waste (only glass, PTFE and filling materials)
- Reusable carbon column

Advantages

**Fastest
processing times**
when processing from
raw extracts (up to 5 g fat)

**Greatest
flexibility**
for various options see page 5

**Lowest
costs**

**Highest degree
of automation**

Faster than Ever

Sample preparation with the novel DEXTech Plus 3-column-design is faster than ever. For example, a sample can be processed in only 35 min from raw extract; manual preparation is not necessary. Hence, only one system is required (≙ one flow path) to process 3.500* samples per year. Solvent consumption per run is very low.
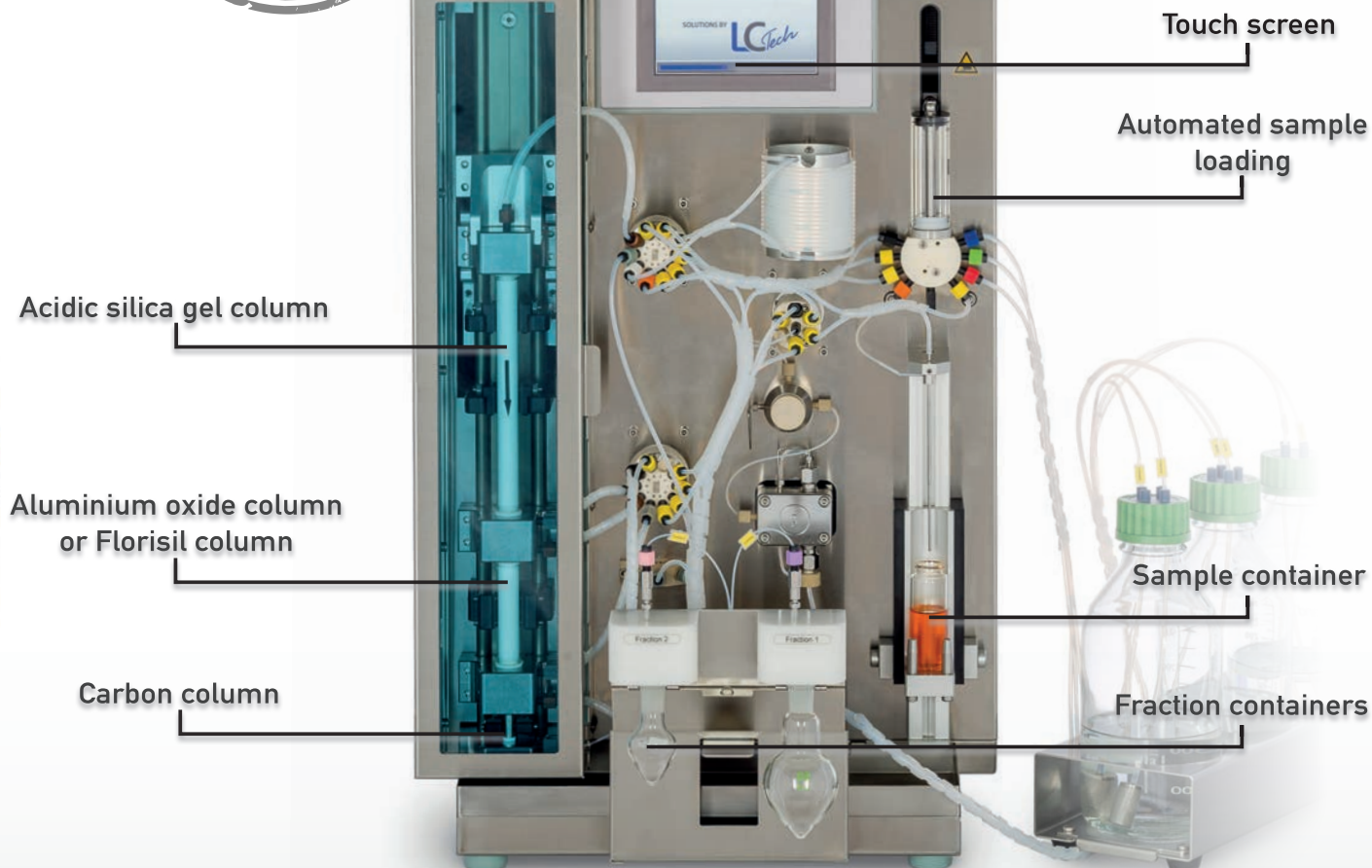
Moreover, DEXTech Plus sets new standards in regards of flexibility, low cost per sample and effortless handling.

For high-throughput laboratories particularly attractive: Parallel use of 4 systems achieves a throughput of 14.000* samples per year.

Set-up with four DEXTech Plus systems

* Sample throughput with a changeover time of 3 minutes between samples, and a running time of 9 hours per day over 250 days per year

3500 samples per year

Touch screen

Automated sample loading

Acidic silica gel column

Aluminium oxide column or Florisil column

Carbon column

Sample container

Fraction containers

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Patented Locking System: Just Click It

Low Cost 3-Column Set-up

1. **Acidic silica gel column**
   - samples containing < 1.5 g fat – SMART column
   - samples containing > 1.5 - 5 g fat - Universal column
   Easy change between Universal and SMART column by fitting an adapter.
2. **Aluminium oxide column or Florisil column;** depending on number and composition of target fractions.
3. **Carbon column;** reusable. This reduces the already low column cost even further.

Depending on the individual requirements, matrix or desired method, the user can equip the DEXTech Plus with different set-ups, simply insert the respective columns – **„just click it".**
No screw connections, no tools, no other manual steps. From sample to sample – fast, flexible, effortless.

Standard Method or Flexible Parameterisation

Evaluated standard methods, e.g. the default SMART method for 35-min processing, are stored in the DEXTech Plus. These methods can easily be accessed via the password-protected touch screen. The user may also freely parameterise a method and store it in the system. The stored methods can be opened and modified at any time and then be saved again under a different name.

Method Name		Default Smart		N°	1
back		Conditioning			
	ml/min	min	n-Hexane		▼
Conditioning 1	7.0	4.0			n-Hexane
Conditioning 2	7.0	2.0			n-Hexane
Conditioning 3	7.0	1.0			Toluene
Conditioning 4	7.0	1.0			DCM/n-Hexane

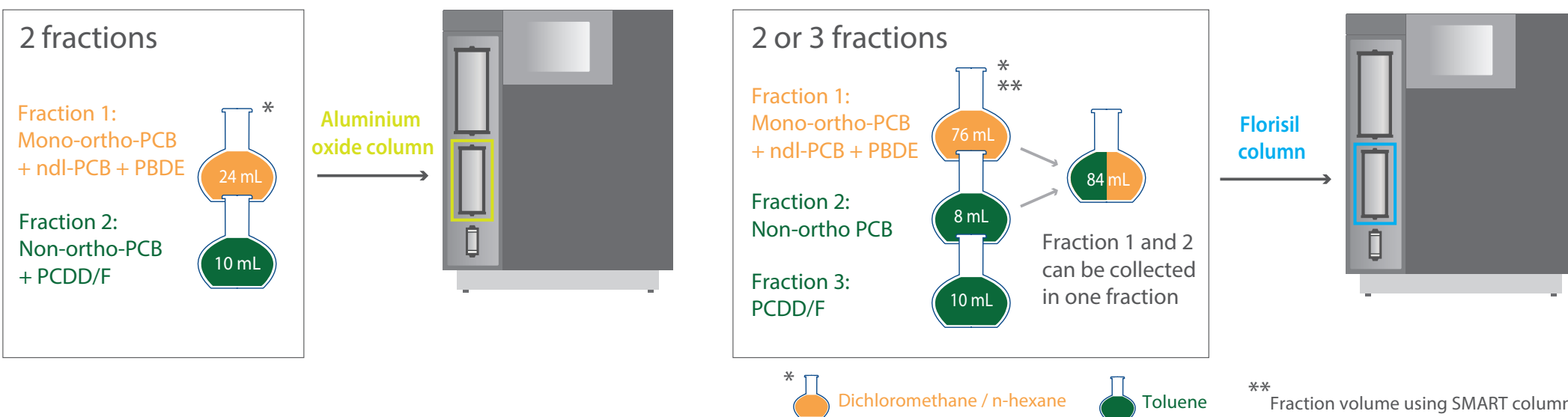*Screen for freely parametrizable method input*

Easy, quick replacement and insertion of columns and adapter – "just click it".

Great Flexibility with Low Solvent Consumptions

Aluminium Oxide or Florisil: The Choice Is Yours

By using different types of columns and the freely parametrizable method input, you have the opportunity to configure the DEXTech Plus system according to your requirements. The most common applications are shown below. Using the Florisil column you have the choice between two or three fractions, simply by changing the tubes.

2 fractions

Fraction 1:
Mono-ortho-PCB
+ ndl-PCB + PBDE

*

24 mL

Fraction 2:
Non-ortho-PCB
+ PCDD/F

10 mL

Aluminium oxide column

2 or 3 fractions

Fraction 1:
Mono-ortho-PCB
+ ndl-PCB + PBDE

*
**

76 mL

Fraction 2:
Non-ortho PCB

8 mL

Fraction 3:
PCDD/F

10 mL

84 mL

Fraction 1 and 2 can be collected in one fraction

Florisil column

* Dichloromethane / n-hexane   Toluene   ** Fraction volume using SMART column

Short Run Times, Low Solvent Consumption

Solvent	SMART column	Universal column
n-hexane	112 mL	203 mL
DCM / n-hexane 1:1	24 mL	24 mL
Toluene	10 mL	10 mL
Total	**146 mL**	**237 mL**
Run time	**34 min.**	**51 min.**

Solvent	SMART column	Universal column
n-hexane	94 mL	178 mL
DCM / n-hexane 1:1	24 mL	24 mL
Toluene	18 mL	18 mL
Total	**136 mL**	**220 mL**
Run time	**44 min.**	**56 min.**

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Automation with Safety

Highest Degree of Automation

- Click columns into the column tower – "just click it". The tower will be automatically locked by a patented process.
- Place sample vial into the DEXTech Plus. The sample will be automatically loaded via the syringe pump; however, at no time the sample will come in contact with the syringe pump itself. For quantitative transfer the sample container will be rinsed and the remains added into the sample loop.
- Select method and start process.

Throughout the entire process, the touch screen displays the processing status. An acoustic signal as well as an LED display indicates the end of processing.

The clean-up performed by the DEXTech Plus is compliant with the EPA method and European regulations.

User Safety

- Leakage sensor below a removable drip tray
- Pressure sensor for pressure monitoring
- Overflow sensor for waste level control
- No mechanical movement when the door is open
- System operates in a low voltage range
- No fume hood necessary due to closed fraction flasks

Should one of the sensors send a signal, the system will stop processing. After elimination of the error, processing of the current sample will be continued.

Report for Quality Control

As standard, DEXTech Plus is equipped with an USB interface to transfer the in the software generated processing protocols to a PC. All sample related data are consequently stored for documentation.
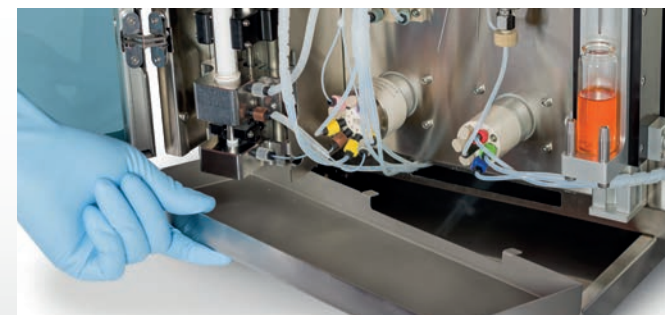

USB interface for documentation
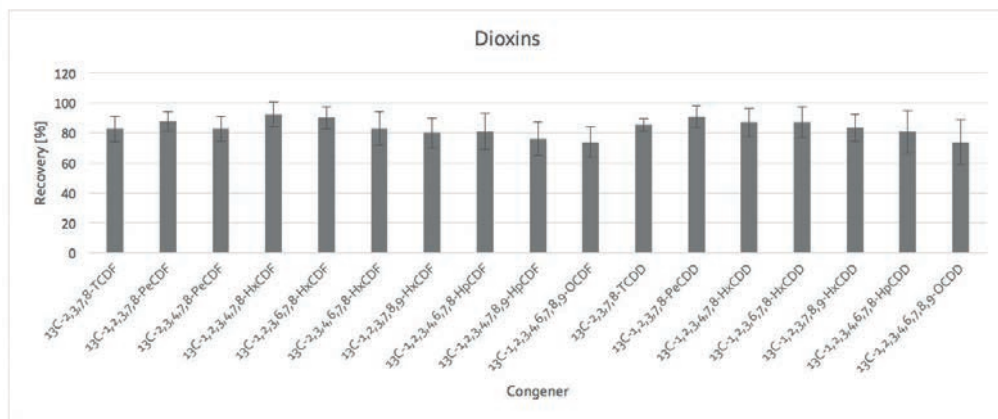

Automated sample loading

Rinsing of sample vial for quantitative transfer

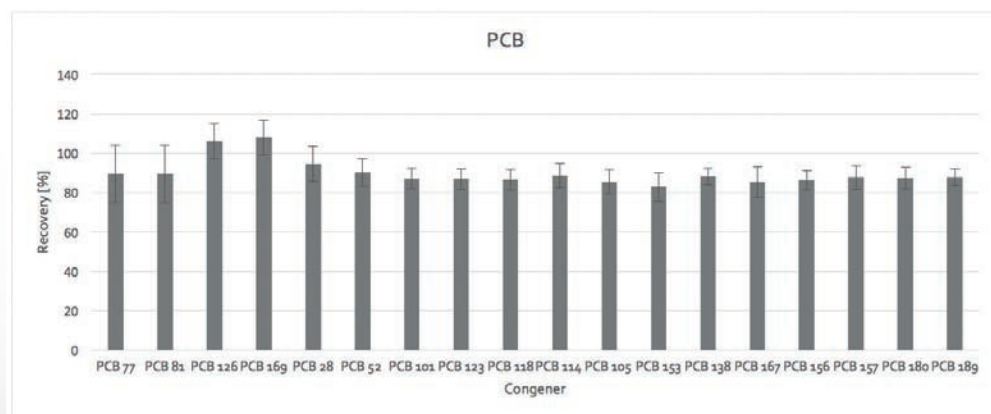*Easy to remove and clean drip tray above the leakage sensor*

Reliable and Reproducible Results

Results Dioxin
Sources: Chemical and Veterinary Investigation Office Münsterland-Emscher-Lippe
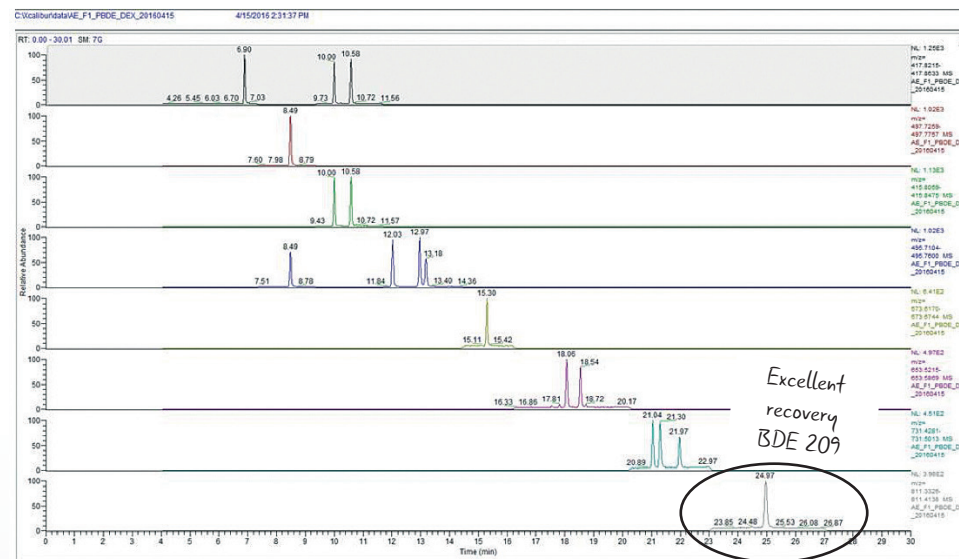*(governmental laboratory); LCTech Laboratory*

Results PCB
Sources: Chemical and Veterinary Investigation Office Münsterland-Emscher-Lippe
(governmental laboratory); LCTech Laboratory

No Cross-Contamination

Cross-contamination is reliably prevented.
- Continuous rinsing of all parts that have come in contact with the sample
- Exchangeable columns
- No contact between sample and syringe pump

Clear signals, sharp separation, low background noise and excellent recoveries
Sources: Bavarian Health and Food Safety Authority (LGL-Oberschleißheim, governmental laboratory); LCTech Laboratory

We are proud to compare:

| Lowest Cost | Fastest Processing Time | No Cross-Contamination | Highest Degree of Automation | Greatest Flexibility | Ultimate User Safety |

The information contained in this brochure is based on our current knowledge and has been carefully checked. However, since we continually work on the further development of our products, please accept texts, pictures and numbers on these pages as non-binding and exemplary only.

SOLUTIONS BY

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