

**FREESTYLE SPE: Ingenious Automation**

Examples of daily routine applications:



Detection of drugs in human blood  
(bidirectional SPE)



Detection of drugs in human brain  
(bidirectional SPE)



Detection of drugs in horse urine -  
high throughput in doping control



Detection of steroids in animal  
food products (Dual-SPE)

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**Ingenious Automation:  
Solid Phase Extraction (SPE)  
for Forensics and Toxicology**

**Sophisticated, round-the-clock, unique**

**Proven: No Cross-contamination!**

Owing to the clever system design, specially selected components, such as valves and needle, integrated rinsing steps as well as a unique sample loading procedure, any carry-over is reliably excluded.

**Reliable, Reproducible Results**

Automation allows for processing of similar samples with the same parameters.

**Sample Preparation Around  
the Clock**

"Non-Stop Policy" attributable to permanent pressure monitoring.

**Sample Processing  
Documentation**

Traceability of the processed samples as well as of the method details via report function.

**Easy Handling**

Control via the easy-to-understand FREESTYLE software. Effortless parameter input with Drag & Drop and sliders. Uncomplicated transfer of manual methods.

**Processing of Difficult Samples**

Depending on the matrix, a positive pressure of up to 4 bar can be applied; therefore even difficult samples can in many cases be successfully pushed through the column. Higher flow rates also lead to shorter processing times.



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Forensics and toxicology often deal with samples that are due to their composition difficult to process. These include particularly viscous or proteinaceous filaments containing samples, which may cause clogging of the SPE column. Additional processing steps in advance of the solid phase extraction are usually necessary to reduce the risk of clogging, however, these may influence recovery rates. Other matrices might be very adhering and sticky and, because of their biological nature, difficult to remove from the system's tubing without leaving a residue.

### FREESTYLE Puts on Pressure

In the FREESTYLE system, a positive pressure of up to 4 bar can be applied enabling the most viscous samples to be pushed through the column.

Should a column become clogged, the system pressure control ensures that the pre-set pressure value is not exceeded. The system will then stop the processing of this sample, mark it in the sample list, perform a rinsing step and go on to start processing the next sample in the sample sequence.

This 'Non-Stop' policy enables unsupervised sample processing overnight or over the weekend.

Through the additional use of plungers, dead volumes in the columns are minimised and flow rates are increased. Conditioning, rinsing and elution solutions are put over the column applying a constant pressure. The processing time per sample is consequently reduced.

FREESTYLE offers a suitable rack for each column. The use of adapters allows for the usage of different column types in the same rack. Since sample rack and sample containers can be freely selected, materials and methods already established in laboratories can be easily transferred.

Up to 15 freely definable solvents facilitate processing of the most diverse application and elution profiles.

By means of the easy-to-use software, manual and validated methods are quickly transferred to the system. Via Drag & Drop or sliders, setting method parameters is extremely easy and the individual steps of the manual method can be simply transferred into automated processing. In the laboratory routine, saved methods can be readily called up and then applied. Prioritisation of urgent samples is also possible at any time, even during a running operation.



### Perfect Sample Loading for any Application!

#### Unique

#### 1. Bidirectional SPE

Sample volume: 5 mL  
Suitable for forensic matrices, e.g. blood, urine and highly viscous and **particularly adhering matrices, such as brain.**

The sample is taken up via the Luer tip of the SPE column. It passes the column sorbent, then the sample flows through the sorbent a second time in the opposite direction and is dispensed into a collecting vial.

#### Perfect sample loading for forensic applications:

No cross-contamination, since the sample does not get into contact with the system at any time.  
The sample is available for further analysis  
Elution with minimal amounts of solvents  
Minimises undesired matrix effects

#### 2. Standard Sample Loading

Sample volume: 1-100 mL  
For example for horse urine, human blood and urine samples.

The sample is drawn by the sample needle into the sample loop via the valve and loaded onto the SPE column also via the valve.

#### 3. Direct Sample Loading

Sample volume: 0.3 - 1 mL  
For example for small volume samples.

The sample is drawn by the sample needle and directly loaded onto the SPE column.



Plunger and Columns

### Varied Elution Procedures

The elution procedures are just as varied as those for sample loading. Depending on the requirements, these can be integrated in the methods with only a few mouse clicks.

#### Standard procedure:

- One solvent – one collection container
- Several solvents – different collection containers

#### Special procedures:

- One solvent – several collection containers of the same size that are filled to the maximum before moving on to the next container
- Several solvents – one collection container
- Direct elution from the SPE column into the EVaporation chamber

### Automation for special tasks: Dual-SPE

Processing a sample sequentially over two SPE-columns of the same or different formats without manual intermediate steps.



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