

SPEEDY®

Solid Phase Extraction System for Filtration Plates, Columns & Cartridges



SPEEDY® is an automatic system for solid phase extraction and filtration, which can handle filtration plates and SPE plates or cartridges.

Independent probes condition the column then dilute and dispense the samples.

Reproducible and reliable results are achieved with software controlled vacuum and/or positive pressure (Nitrogen or air).

- Automates the entire workflow for Solid Phase Extraction and filtration
- Handles all commercially available filter plates, columns and cartridges (1, 3, 6 to 10 ml) & filter disks
- Processes samples depending on consistency (plasma, sera, cell culture materials, viscous samples)
- Controls the extraction process
- Optional heating and cooling, automated vial closure, evaporation, pH-measurement and adjustment

SPEEDY® automates the entire workflow for solid phase extraction and filtration:



1. Sample dilution



2. Conditioning of plates/ cartridges



3. Transfer of samples



4. Processing samples



5. Washing the columns



6. Positioning of elution rack / plate



7. Exchanging the plates & racks for the next run

Sample dilution

with 4 independent probes SPEEDY® dilutes the samples (viscous media, sera, plasma, cell culture material, etc.) to a target concentration.

Conditioning of plates / cartridges

SPEEDY® automatically conditions and washes the sorbent by adding the reagents through the probes to the sorbent, cartridge or filtration block. For fast delivery of liquids an integrated 6-way valve is used to deliver up to 6 different solvents. These solvents are stored externally to save workbench space.

Transfer of samples

The samples are transferred with the pipetting probes. Less than 10^{-7} of carry over are achieved by our stainless steel probes, a special wash station and programmable wash procedures. For contamination free sample distribution disposable tips are available as an option. Serum and plasma samples can be transferred using our clot detection feature.

Processing samples

The samples are processed automatically and reproducibly with positive pressure through the well under a user-defined and software-controlled flow rate and are collected in a receiving plate or eluent rack. The variability of the flow rate allows for optimum separation conditions. Since each cavity is addressed individually, samples of different consistency can be processed at the same time with no need to use an entire SPE plate or cartridge rack if required.

Run - Check

SPEEDY® checks each cavity of the SPE filtration plate or each cartridge to see if they have been processed correctly. Unprocessed samples can be re-run if necessary or excluded from the rest of the process.

Washing of the columns

The columns are washed by adding the reagents through the probes to the cartridge or filtration block.

Positioning of elution plate / rack

Using the gripper, SPEEDY® places the 96-well receiving plate or eluent rack accurately into the filtration station to collect the samples.

Target compound elution

In the final step the compounds are eluted by adding the solvent through the pipetting probes.

Preparing the next set

SPEEDY® automatically exchanges the filtration plate or cartridge rack as well as the collecting plate or rack to process the next set of samples, hence a large number of extractions can be processed automatically in one run.

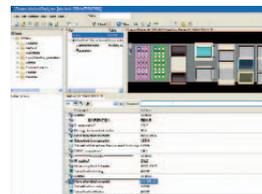
Flexible Labware

All commercially available filtration plates and cartridges can be used on our systems. Even mixed cartridge sizes can be processed in the same run.



Software

SPEEDY® is controlled by a sophisticated, easy to operate Windows® software. The user can define the workbench by adding and creating new racks and develop their own separation methods and programmes with simple “mouse-clicks”. All operations are easily observed, as they are graphically displayed on the computer screen. WinSPEEDY can communicate with all common databases and easily exports and imports datasheets (e.g. Excel®).



Options

Sample Identification

An integrated 2D high resolution CCD-camera can read the barcodes on tubes, vials and plates to ensure the identification of your samples.



Vial Closure

For the preparation of HPLC & LC/MS samples an integrated capping station for crimp neck or screw neck autosampler vials seals open vials which can be placed on a cooling rack. Alternatively, when using pre-crimped autosampler vials, a specially designed bevelled thin HPLC probe can be used to transfer the samples by piercing through the septa of the vials.



Evaporation & Reconstitution

To evaporate the solvents our evaporation manifold can be integrated which dries the samples with a flow of nitrogen. With an integrated vortexer the dried sample can then be easily redissolved in a different solvent.



pH-measurement & Adjustment

An integrated pH-probe can measure the pH-value of the samples which can be adjusted with the addition of acid or base to reach a pre-defined value.



Temperature Controlled Filtration

The filtration station is made of aluminium for efficient heat transfer and has been designed for commercially available filter discs. The setup of the filtration station gives you easy access to the filter discs so that the residue can be used for further analysis. The filtration block, as well as the receiving vials, can also be heated or cooled, the temperature of the block ranges from room temperature to 80°C. In combination with our temperature-controlled probes, this leads to an entirely temperature-controlled process.



Filter Disks

SPEEDY can also handle commercially available filter disks.

System configuration

Automatic Solid Phase Extraction (SPE) System

with integrated handler for transportation of plates, SPE-blocks, opening of vacuum box, inserting / extracting receiving plates/racks

Equipped with 4 stainless steel single channel pipetting probes, independent variable spacing between the probes (min.8mm, max. 340mm)

Liquid level detection at each probe

1 set of pressure spots

4 precision syringe pumps with syringes (500ul, 1ml, 2.5ml, 5ml)

Active wash station

High-Flow 6-way valve for 6 system liquids

Vacuum box for 96-well SPE-block or cartridge rack

Software controlled pulsed vacuum

Software controlled positive pressure

Software package WinSPEEDY

Complete with PC, keyboard and TFT monitor

Dimensions

900 x 710 x 550 mm (WxDxH)

1200 x 710 x 550 mm (WxDxH) optional

2000 x 710 x 550 mm (WxDxH) optional

Options

- Sample Identification
- Vial Closure
- Evaporation
- pH-measurement & Adjustment
- Temperature Controlled Filtration
- Flexible Labware