

ChromTech options for PAL systems

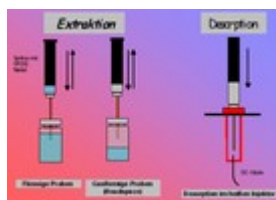


SPDE features full automation for dynamic sample extraction, desorption and analysis using the CTC Combi PAL. Most of our customers use SPDE for food and flavor research, forensic analysis or environmental applications. The typical lifetime of a single SPDE syringe is 1500 injections, though can be higher if a clean matrix is used.

Description:

A gas-tight 2.5mL syringe is equipped with a special needle that is coated on the inside with an extraction phase. The phase can be applied in varying degrees of thickness.

The adsorption process is best described as follows: A liquid or headspace sample is drawn up into a 2.5mL syringe, thereby adsorbing analytes onto the stationary phase. A distribution balance is reached between the liquid sample matrix and the active phase. The analytes are concentrated onto the phase by repeatedly moving the plunger up and down, thereby forcing the headspace or fluid through the needle. Fast plunger speeds ensure a quick exchange of sample near the active phase.



After adsorption, the syringe picks up carrier gas from the fiber bakeout station (if necessary, the station is also used to dry the coating and syringe). Then, the autosampler moves the syringe over to the hot GC inlet, and the analytes are desorbed. Additional gas flow from the syringe forces the analytes into the inlet, thereby ensuring sharp peak shapes. This technique can be used with splitless flow for maximum sensitivity.

System Type:

- Dynamic extraction of liquid and gaseous samples
- Use of various phases and film thickness
- No mechanical or thermal stress
- High-grade steel capillary needle, which adds to its robustness
- Analyze a sample while extracting the next one
- Fully automatic use with a standard PAL system and any chromatographic system with split/splitless injector
- No extra thermal desorption system needed
- Total control of all extraction parameters
- More convenient than other extraction methods
- Less time necessary for sample incubation
- Needle coated on the inside walls with a choice of phases and variable thicknesses
- Optimized sample contact with the phase is reached by setting the number of plunger pumpings, resulting in shorter incubation time

SPDE-Syr2.5ml SPDE Syringe 2.5 ml, gastight, for screw-on needles for use with replaceable SPDE needles, 56 mm or 74 mm
SPDE-2630022 Teflon seals for SPDE Syringe Plunger, 5 per pack

Replaceable needles, coated, 56 mm:

- SPNdI-01-50-56 SPDE Syringe needle, coated with PDMS, 50 µm, 56mm
- SPNdI-01/AC-50-56 SPDE Syringe needle, coated with PDMS/AC, 50 µm, 56 mm, coated with PDMS+10% active charcoal
- SPNdI-5-50-56 SPDE Syringe needle, coated with CT-5, 50 µm, 56 mm, coated with 5% Diphenyl / 95% Dimethylpolysiloxane, 50 µm.
- SPNdI-WAX-50-56 SPDE Syringe needle, coated with Polyethylenglycol (Carbowax), 50 µm, 56 mm
- SPNdI-1701-50-56 SPDE Syringe needle, coated with CT-1701, 50 µm, 56 mm, coated with 14% Cyanopropyl / 86% Dimethylpolysiloxane
- SPNdI-225-50-56 SPDE Syringe needle, coated with CT-225, 50 µm, 56 mm, coated with 25% Cyanopropyl / 25% Phenylpolysiloxane / 50% Methylpolysiloxane.
- SPNdI-Cust-56 SPDE Syringe needle, coated with custom phase, 50 µm, 56 mm. (Please specify phase coating)

A SPDE-option for volatile components



SPDE™ EXTRACTION COOLER

Since the introduction of SPDE, various users have expressed the desire to be able to extract volatile substances even better. Since the SPDE syringe needle usually works at ambient temperatures or at sample temperature during the extraction, volatile substances are poorly extracted compared to less volatile components. This is also a limitation for SPME. In contrast to this method, SPDE accomplishes these applications by means of intensive needle cooling!

With the use of the SPDE Extraction Cooler, very volatile components can easily be extracted without problem. Figure 1 shows a schematic drawing of the extraction cooler, which uses a Peltier-cooler for the SPDE needle. The cooler is installed on top of the CHROMTECH single magnet mixer (SMM) (fig. 2) and reaches temperature differences of up to 40°C. This means the needle can cool down to -15°C while working at an ambient temperature of 25°C.

Features:

- For volatile components
- VOCs in drinking water
- Simultaneous sample heating and needle cooling
- Easily mounted
- Retrofittable for all Single Magnet Mixers (SMM)
- Peltier-cooling
- Working range up to 40°C below ambient temperature

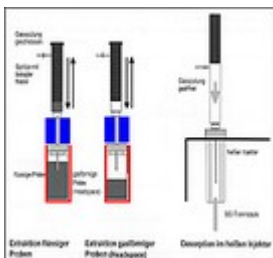


Fig. 1: Principle of the automated SPDE extraction. The analyte is enriched by controlled pumping through the specially coated syringe needle. Extraction Cooler: The analyte accumulates inside the SPDE needle at -15° C and is then thermally desorped. During enrichment, the sample is heated while the needle is being cooled.



Fig 2: The SPDE - Extraction Cooler is simply mounted on top of a Single Mixer. The SPDE needle penetrates the vial only by a few millimeters.

"For SPME and SPDE Applications"



SINGLE MAGNET MIXER

What is a Single Magnet Mixer?

This unit is nothing more than an automated stirring plate, which rotates the magnet located in each vial at speeds of up to 750RPM (1500RPM option available). At the same time, it can be used to heat or cool your sample.

Description:

The most beneficial application of the Single Magnet Mixer is SPME immersed in liquid. When immersed in liquid, the SMM is gentle with the fiber and needle. The liquid is mixed by a small magnet inside the vial and creates a vortex at high speeds. Fiber lifetime is significantly increased due to the gentle mixing within the SMM.

System Features

- Intensive mixing capability by using magnetic stir bar for quick equilibrium
- Easy comparison/transfer between manual and automated methods
- No temperature gradients inside the vial – even while sampling
- Heats up to 150° C
- Optional Peltier Cooling available
- Fully automated sampling through closed housing
- PAL controls all heating and mixing cycles
- Controllable with Firmware or Cruise Control Software
- SMMs for 2mL, 10mL or 20mL vials



With the Baker Option for your Combi PAL, headspace is automatically determined for voluminous samples!



Description:

A container with the sample is placed on the plate elevator of the PAL Baker. As soon as the sampling mode is started, the container elevator moves upwards until the heating compartment is completely closed. After reaching a pre-set temperature followed by the incubation time, a heated gas-tight syringe withdraws a defined sample amount out of the heated container.

Finally the gas sample is injected into a GC or GC/MSsystem for detection. The sample elevator moves back to its starting position, allowing the analyzed sample to be removed from the container. The sampling compartment and syringe are now purged by an inert gas.

System type:

- Sample compartment opens and closes automatically
- No sample transfer lines or switching valves
- Full automatic use with standard PAL System and GC with SSL injector.
- Sample compartment heats up to 165°C
- Purge gas flow after each analysis – no contamination!
- Leak-tight sample compartment with 750ml capacity
- Sample containers up to 135 mm high x 75 mm diameter
- For use with glass or metal containers
- PC Cruise Control Software
- Works with HP/Agilent ChemStation or ThermoQuest Xcalibur
- Available as a complete analytical solution including Agilent 6980 GC, Combi PAL, Baker and Chromatography Data System

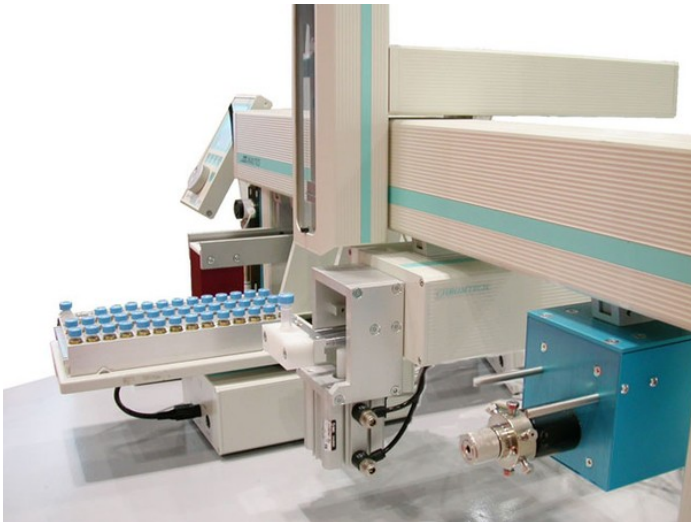
Applications:

- Analysis of Solvents in Paper, Tissues etc.
- Analysis of Solvents in Plastics, Powders, Granules etc.
- Analysis of Solvents in pharmaceutical products, e.g. tablets etc.

PrepBase

The PrepBase is an attachment for the CTC PAL system that performs online filtration. It uses Whatman Mini-UniPrep™ vials to filter all types of sample matrices.

The PrepBase can be customized to fit your application and needs.



System:

- Suitable for all vial types
- Works with deepwell and microplates
- Dilution of sample and/or standards
- Prepares dilution series
- Extractions (SPE, SPME, SPDE)
- Filtration
- Sample shaking or stirring
- Sample heating or cooling
- Transports vials



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