

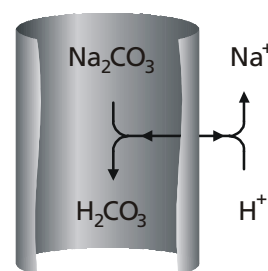
# SAMS™

## MEMBRANE SUPPRESSOR FOR ANION CHROMATOGRAPHY

- ◆ Decreased background eluent conductivity and lower noise level
- ◆ Increased analyte conductivity and higher sensitivity
- ◆ Dynamically regenerated high-capacity membrane suppressor
- ◆ Robust design enabling unattended routine operation

### SAMS™ in Suppressed Anion Chromatography Detection

SAMS™ is a chemically regenerated membrane suppressor for anion chromatography. Its operation is based on selective exchange of protons from an external regenerant channel for cations from the eluent. Anions are prevented from entering the membrane by ion exclusion, and are thus not transported between the eluent and regenerant streams. SAMS™ is manufactured according to state-of-the-art in chromatographic reactor technology, and features both high transport capability and low band-broadening. The benefit of using a suppressor is dual. Because typical eluents in anion chromatography are based on anions of weak acids, the neutralization of these in the suppressor significantly *decrease* the background conductivity level and noise. The analyte ions, on the other hand, are normally anions of strong acids, and as such, their conductivity *increase* when the eluent cations are exchanged for protons.

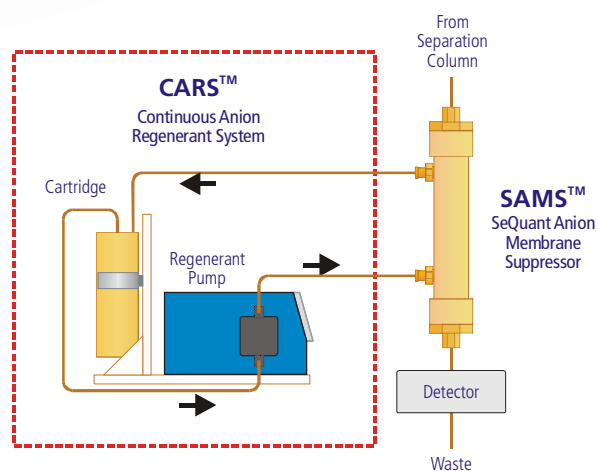


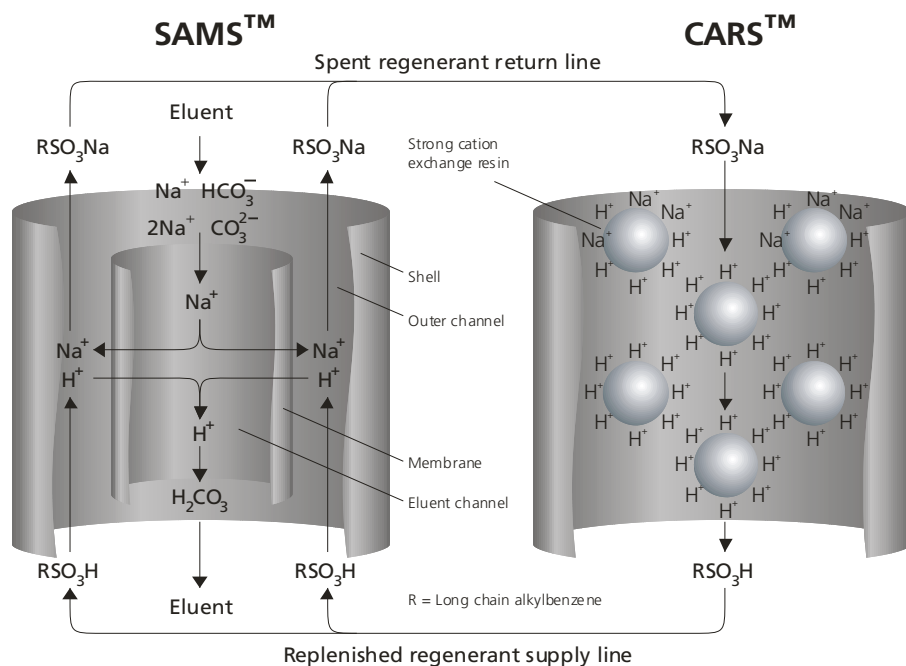
The suppressor reaction with carbonate eluent.



### CARS™ for Continuous Unattended Operation of SAMS™

Although SAMS™ shows good performance when dilute sulfuric acid is used as regenerant solution, the true potential of SAMS™ is reached when employed in combination with the SeQuant CARS™ continuous re-circulation system. CARS™ enables continuous dynamic regeneration of SAMS™ from an external regenerant cartridge containing an ultra-pure cation exchange resin. The CARS™ system is designed for routine use in anion chromatography and offers unattended operation for numerous working days.





Schematic illustration of the SeQuant Anion Suppressor SAMS™ operated with the Continuous Anion Regenerant System CARS™ incorporating the SeQuant ULB™-P high molecular weight organic sulfonic acid (RSO<sub>3</sub>H) solution as a shuttle for transporting protons from the regenerant cartridge to the suppressor membrane and returning with the eluent cations.

### ULB™-P for Ultra-low Background

In the CARS™ system, the SeQuant ULB™-P regenerant solution acts as a shuttle for transporting protons between the regenerant cartridge and the SAMS™ unit. The ULB™-P solution is a liquid cation exchanger (*i.e.*, a high molecular weight organic sulfonic acid) selected for its extremely low forbidden penetration through the suppressor membrane, ensuring a low and quiet background conductivity.

The combined SAMS™/CARS™ system with ULB™-P regenerant solution is designed for routine use in anion chromatography and offers unattended operation at exceptionally low and stable background levels. The high capacity reached by the dynamic regeneration of SAMS™ using CARS™ with ULB™-P, also make the system highly suitable for suppression of high ion-strength eluents and in applications employing gradient elution.

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### Typical Performance of SAMS™ in Combination with CARS™

Eluent Type			Flow Rate	Conductivity	Expected Cartridge Lifetime
NaOH mM	Na <sub>2</sub> CO <sub>3</sub> mM	NaHCO <sub>3</sub> mM	mL min <sup>-1</sup>	µS cm <sup>-1</sup>	full eight-hour working days
10	-	-	1.0	< 3 <sup>1)</sup>	170
-	2.4	3.0	1.0	15-20	210
-	2.4	3.0	2.0	15-20	105

<sup>1)</sup>The minimum background level achieved with hydroxide eluents is highly dependent on the purity of the stock. For optimal performance, use NaOH or KOH free from carbonate. Carbon dioxide is easily absorbed from the air and most commercial solid hydroxide brands contain significant amounts of Na<sub>2</sub>CO<sub>3</sub>. Values below 2 µS cm<sup>-1</sup> can usually only be obtained with eluents prepared from carbonate-free stock solutions.

### Ordering Information

The SAMS™ membrane is produced from an exceptionally stable polymer, ensuring long life. The reactor housing is manufactured from inert PVDF and the sturdy and chemically resistant PEEK eluent channel fittings are designed to fit standard 10-32 UNF conical fittings for 1/16" tubing. The complete CARS™ system includes a robust pump designed for continuous operation, a regenerant cartridge containing an ultra-pure cation exchange resin, a durable stand for mounting the cartridge, ULB™-P regenerant solution and a tubing assembly necessary for connecting SAMS™.

### SAMS™, CARS™ and Accessories

P/N	Description
1125-020	SAMS™, Anion IC Suppressor, 20 cm, 10-32 fittings, low volume applications
1125-100	SAMS™, Anion IC Suppressor, 100 cm, 10-32 fittings, standard analysis
1125-200	SAMS™, Anion IC Suppressor, 200 cm, 10-32 fittings, gradient analysis & high ion-strength eluents
7820-001	CARS™, Continuous Anion Regenerant System, Complete kit <i>includes pump, stand, cartridge, ULB™ solution and tubing assembly necessary for connecting SAMS™</i>
7820-911	CARS™, Replacement Cartridge, 0.5 L, capacity 0.9 eq., for normal operation
7820-912	CARS™, Replacement Cartridge, 0.75 L, capacity 1.3 eq., for high ion strength eluents
7820-921	ULB™-P Regenerant Solution, 100 mL
7820-925	ULB™-P Regenerant Solution, 250 mL

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