

## IonPac NS2 Columns

### Quick Start

SP6905 – IonPac NS2, 4.0 x 250 mm, 5µm

SP6906 – IonPac NS2, 4.0 x 150 mm, 5µm

SP6907 – IonPac NG2, 4.0 x 35 mm, 5µm

### 1. Overview

IonPac™ NS2 is a silica-based reversed-phase column for mobile-phase ion chromatography (MPIC) applications using eluents containing trifluoroacetic acid (TFA), heptafluorobutyric acid (HFBA), hexanesulfonic acid (HSA), octanesulfonic acid (OSA), tetrapropylammonium (TPA) borate, tetrabutylammonium (TBA) borate or sodium borate. It provides high performance analysis for hydrophobic amines and hydrophobic acids using suppressed conductivity detection.

### 2. Main features

- Excellent resolution
- Good peak shape
- High efficiency
- Rugged packed bed
- Can be used for conventional reversed-phase LC applications

### 3. Physical data

- Column Chemistry: Covalently bonded alkyl
- Substrate: High-purity, spherical, porous, 5-µm, 120-Å pore silica particles

### 4. Operational Parameters

Column Dimension (mm)	P/N	Maximum Pressure (psi)	Recommended pH Range	Recommended Temperature (°C)	Solvent/Aqueous Compatibility	Recommended Flow Rate (mL/min)	Maximum Flow Rate (mL/min)
4.0 x 250	SP6905	4,000	2.0 – 9.5	20 – 35	Compatible with 0 – 100% aqueous eluents.	0.5 – 1.0	1.2
4.0 x 150	SP6906	4,000	2.0 – 9.5	20 – 35	Compatible with most water-miscible HPLC solvents, except acetone and THF.	0.5 – 1.0	1.2
4.0 x 35	SP6907	4,000	2.0 – 9.5	20 – 35		0.5 – 1.0	1.2

### 5. Operational Guidelines

- Cation eluents: Use typically 0.5 – 10 mM TFA, HFBA, HSA or OSA. Solvent composition is limited based on the solvent compatibility of the suppressor. When using gradient elution with CSRS, it is recommended to maintain constant acid concentration, and vary the organic solvent.
- Cation suppression: See the suppressor manual for detailed instructions and solvent compatibility limits.
  - CSRS or CERS 4mm suppressors are compatible with up to ≤ 40% acetonitrile, and require to be operated in the external water mode of operation.
  - CMMS 4mm suppressors are compatible with all solvent conditions with 20 – 100 mM tetrabutylammonium hydroxide at 2 – 10 mL/min.
  - Flush all solvents out of the suppressor with D.I. water before shutting down the system
- Anion eluents: Use typically 5 – 10 mM sodium borate or 0.5 – 5 mM TPA or TBA borate, pH 8 – 9, prepared from boric acid and the corresponding hydroxide. Solvent composition is limited based on the

solvent compatibility of the suppressor. When using gradient elution with ASRS, it is recommended to maintain constant sodium/TBA concentration, and vary the organic solvent.

- Anion suppression: See the suppressor manual for detailed instructions and solvent compatibility limits.
  - ASRS or AERS 4mm suppressors are compatible with up to  $\leq 40\%$  acetonitrile, and require to be operated in the external water mode of operation.
  - AMMS suppressors are compatible with all solvent conditions with 5 – 50 mN sulfuric acid at 2 – 10 mL/min.
  - Flush all solvents out of the suppressor with D.I. water before shutting down the system

## 6. Column Cleaning

Flush alternately with low (0 -20%) and high (40 - 100%) off-line acetonitrile until the baseline is stable for both conditions.

## 7. Column Storage

- Short term: The column may be stored in eluent or long-term storage solution.
- Long term: Store the column in unbuffered 70% acetonitrile, 100% acetonitrile or 100% methanol.

### Typical HPLC conditions for analysis of hydrophobic cations

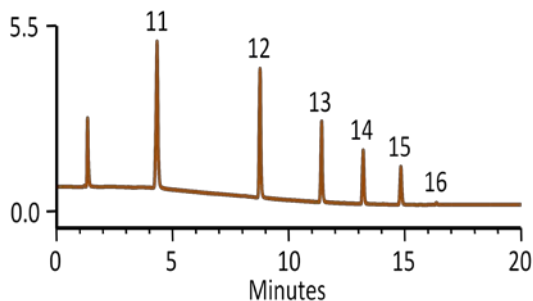
Column: IonPac NS2  
 Dimensions: 5  $\mu$ m, 4.0 x 150 mm (PEEK)  
 System: ICS 3000  
 Mobile Phases: A: Acetonitrile  
                   B: 25mM Trifluoroacetic acid  
                   C: Water

Gradient:	-8.0	0.0	14.0	20.0
%A	5	5	80	80
%B	4	4	4	4
%C	91	91	16	16

Flow rate: 0.800 mL/min  
 Injection: 5  $\mu$ L  
 Temperature: 25 °C  
 Detection: Conductivity  
 Suppressor: CMMS-300 4mm; 0.05M tetrabutylammonium hydroxide at 3 mL/min

Peaks:

11. Tetrapropylammonium
12. Tetrabutylammonium
13. Tetrapentylammonium
14. Tetrahexylammonium
15. Tetraheptylammonium
16. Tetraoctylammonium



### Typical HPLC conditions for analysis of hydrophobic anions

Column: IonPac NS2  
 Dimensions: 5  $\mu$ m, 4.0 x 150 mm (PEEK)  
 System: ICS 3000  
 Mobile Phases: A: Acetonitrile  
                   B: 100 mM sodium borate buffer (pH 8.5)  
                   C: Water

Gradient :	-8.0	0.0	7.0	10.0
%A	25	25	50	50
%B	50	50	50	50
%C	25	25	0	0

Flow rate: 0.800 mL/min  
 Injection: 10  $\mu$ L  
 Temperature: 25 °C  
 Detection: Conductivity  
 Suppressor: AMMS-300 4mm; 0.02 N sulfuric acid at 2 mL/min

Peaks:

1. Perfluorooctanoic acid
2. Perfluorooctanesulfonic acid

