Flexible Anion Analysis with Hamilton PRP-X100 and X110 Columns

Abstract

Hamilton polymeric PRP-X100 and PRP-X110 anion exchange columns are the easy way to separate inorganic and organic anions from 10 ppb to 500 ppm without elaborative pre-concentration or suppression. Virtually all mobile phases, based e.g. on hydroxide, carbonate, benzoate or phthalate eluent, can be used with PRP-X columns to provide good performance for any kind of anion separation.

Column Quality

Column-to-column reproducibility has become one of the most critical aspects of column quality. Nobody wants to develop a method only to find out that the column that they purchase later for the same application does not perform in the same manner. Every Hamilton column is produced according to ISO 9001, validated and delivered with a Certificate of Analysis to ensure perfect reproducibility of your results.

Robust and Durable Polymer Columns

PRP-X100 and PRP-X110 columns are packed with a high quality polystyrene-divinylbenzene (PSDVB) resin of well defined porosity with covalent bounded trimethylammonium anion exchange groups. This highly inert polymeric support resists chemical attacks from organic solvents and aqueous buffers (0-100% aqueous or organic; pH 1 to 13), effectively lengthening the column lifetime. The columns may be cleaned under harsh conditions to completely remove any persistent contamination and the subsequent regeneration procedure will quickly return your chromatography back to its original state.

Wide Application Field

PRP-X100 and PRP-X110 columns can be used with any existing HPLC or ion chromatograph to easily determine a large variety of anions in almost any sample matrix including air, water and soil, for example:

- **PRP-X100** columns are most frequently used for the separation and quantification of inorganic anions between 10 ppb to 500 ppm (Figure 1A). This range allows the injection of native samples without laborious pre-treatment. Inverse UV detection was used in Figure 1A and demonstrated comparable performance to commonly used conductivity detection.

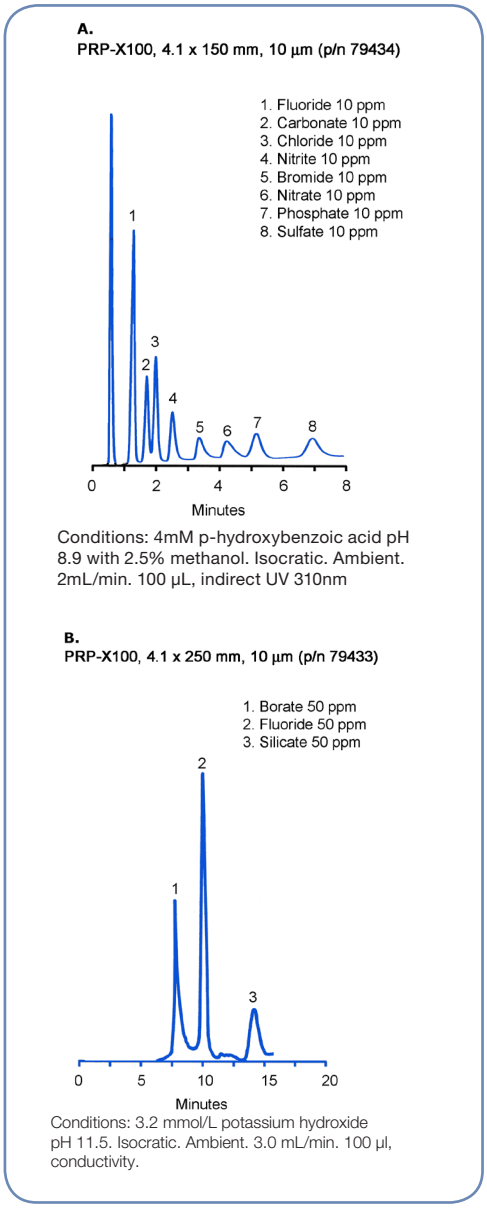

Figure 1:
Example applications of PRP-X100 anion exchange columns.

A. Separation of standard anions with indirect UV.

B. Separation of difficult anions with conductivity detection.

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Besides, high quality anion analysis may be performed without substantial investment since HPLC systems equipped with a simple UV-detector are available in most laboratories.

- **PRP-X100** columns easily separate difficult anions such as fluoride, borate and silicate at high pH conditions (Figure 1B).
- Weak and polarizable anions such as perchlorate, thiosulfate or iodine are easily separated using the **PRP-X110** and hydroxide eluent (Figure 2A).
- **PRP-X110** columns are also used for the separation of trace levels of inorganic and organic anions between 20 ppb and 20 ppm. The lower capacity yields a better resolution and narrower peaks for weak or polarizable anions.
- **PRP-X110S** is pre-equilibrated with carbonate buffer for easy determination of inorganic anions in the suppressed conductivity mode as required by EPA 300.0 Part A (Figure 2B).

Conclusion

Hamilton PRP-X100 and PRP-X110 are the perfect solution for anion analysis in water or environmental samples. The robust design and covalent surface modification of the packing material lead to a highly increased lifetime as compared to the competition. The production process is compliant to ISO 9001 ensuring an outstanding column-to-column and lot-to-lot reproducibility.

Key Ordering Information

All columns are sold in various configurations: Column lengths from 50 to 250 mm, column diameters from 2 to 4.6 mm and packing particles of 5, 7 or 10 µm diameter. The cartridge material is stainless steel or PEEK. Custom size configurations, e.g. for preparative IC, are available on request.

For more detailed information on application or ordering please consult www.hamiltoncompany.com or email to contact@hamilton.ch.

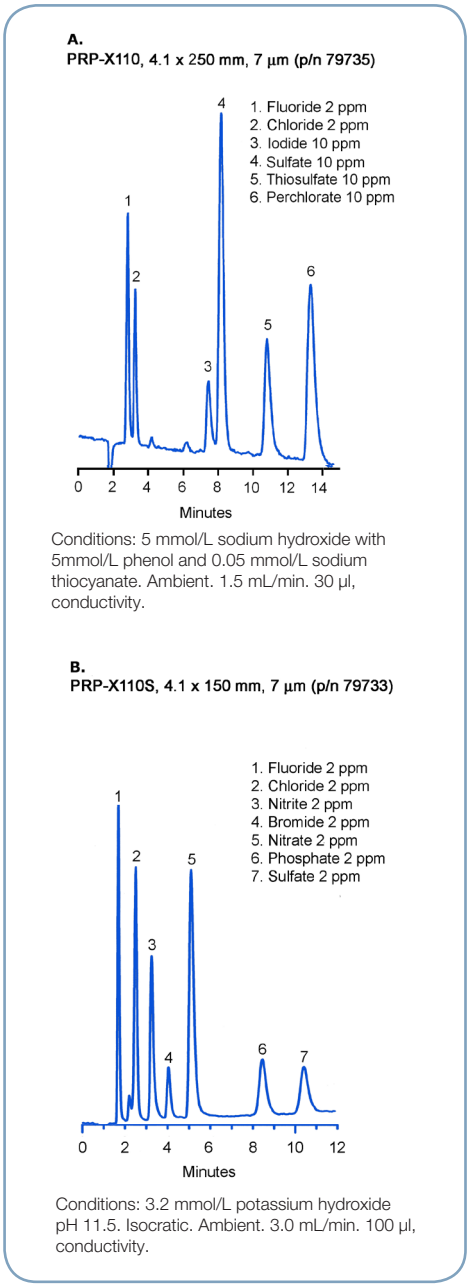

Figure 2:
Example applications of PRP-X110 anion exchange columns - Especially developed for maximum efficiency and trace level analytics.

A. Separation of weak anions with conductivity detection.

B. Separation of standard anions at low concentration with conductivity detection.

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Web: www.hamiltoncompany.com
USA: 800-648-5950
Europe: +41-81-660-60-60

Hamilton Americas & Pacific Rim
4970 Energy Way
Reno, Nevada 89502 USA
Tel: +1-775-858-3000
Fax: +1-775-856-7259
sales@hamiltoncompany.com

Hamilton Europe, Asia, & Africa
Via Crusch 8
CH-7402 Bonaduz, GR, Switzerland
Tel: +41-81-660-60-60
Fax: +41-81-660-60-70
contact@hamilton.ch

To find a representative in your area, please visit hamiltoncompany.com/contacts.