



SPE Application Note for Phenols from Water (Optimized for HPLC analysis)

This method was developed for the extraction of phenols from water samples using a non-polar retention mechanism. This method was optimized for use with subsequent analysis by reversed phase HPLC. If GC is the analytical method of choice, please refer to application note IST1037.

EXTRACTION PROCEDURE

ISOLUTE® SPE Column: ENV+ 200 mg/6 mL (Part # 915-0020-C)

Pre-treatment: Adjust sample (1L) to pH 2.0 with 6.0M hydrochloric acid.

Solvation: Solvate the column with methanol (3 mL).

Equilibration: Rinse the column with deionized water adjusted to pH 2.0 with 6.0 M hydrochloric acid (3 mL).

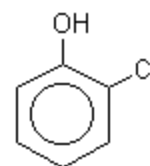
Sample application: Apply the sample at a flow rate of 60 mL/min.

Interference elution: Elute interferences with deionized water (10 mL). Dry the column for 30 seconds under vacuum.

Analyte elution: Elute the analytes with 0.1% (v/v) formic acid* in methanol (2 x 4 mL). Apply the first aliquot, and soak for 1 minute. Apply the second aliquot, soak for 1 minute, and combine both fractions prior to analysis.

* Acetic acid may be used in place of formic acid.

Structure Various. 2-chlorophenol is shown.



Structural considerations The analytes are generally small, relatively polar compounds. The -OH group is ionizable, and the sample is pH adjusted to ensure protonation of this group, and therefore retention on the sorbent.

Matrix considerations The analytes are extracted from a polar aqueous matrix.

Analytical method HPLC

Genesis ODS: 4 µm x 15 cm x 4.6 mm

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Mobile phase: 75:25 (v/v) acetonitrile : potassium hydrogen phosphate buffer, (0.01M, pH 7.0), isocratic
Temperature: ambient
Detection: UV, 280 nm
Injection vol: 10 ul
Run time: 5 mins

Reagents

General comments 1. The following recoveries were obtained using this method, from a 1 L water sample spiked at 100ppb of the listed phenols:

Analyte	% recovery (absolute)
phenol	98.1
2-chlorophenol	99.3
2,4-dichlorophenol	100.4
2,4,6-trichlorophenol	97.2
pentachlorophenol	101.3

2. Previous # IST3010

ISOLUTE column part numbers represent the product configuration of choice for use with a vacuum sample processing station. For 96-well and alternative column configurations compatible with any SPE automation system, please contact Biotage.

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