Waters

SPN 4

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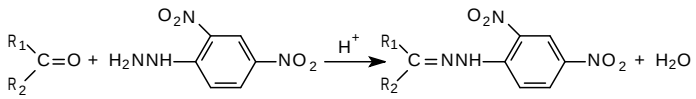
Sample Prep Notes

Waters XPoSure™ Aldehyde Sampling Cartridges for Air Monitoring Applications

Same Chemistry – Lower Detection Limits

Waters XPoSure Aldehyde Sampling Cartridges [Box of 20, P/N WAT047205] are convenient, reproducible sampling devices for quantifying aldehydes down to the ppb range in workplace and indoor air. XPoSure Cartridges contain DNPH-coated silica. When carbonyl-containing compounds are adsorbed from air samples onto this matrix, they are derivatized according to the following scheme:



This is the same derivatization reaction used in NIOSH Method 2532, EPA procedures TO-11 and IP-6A, and ASTM D5197.

Low Background for High Sensitivity

XPoSure Cartridges have the lowest guaranteed background levels for reliable quantitation.

Background per Cartridge:

- ❑ < 0.06 µg formaldehyde
- ❑ < 0.15 µg acetaldehyde
- ❑ < 0.38 µg acetone per cartridge.

Quantitation Limits:

- ❑ 15 minute Short Term Exposure Limit [STEL] measurements: 20 ppb in 22.5-liter air sample.
- ❑ 8 hour Permissible Exposure Limit [PEL] measurements: 10 ppb in 48-liter air sample.

Recommended Maximum Capacity per Cartridge:

- ❑ 70 µg formaldehyde

Step 1. Collect Air Sample

Connect the female tip of a cartridge to the intake port of a suitable air pump, and draw an air sample through the cartridge.

- ❑ Suggested sampling rate: 0.1 - 1.5 L/min
- ❑ Suggested air collection volume: 15 - 60 liters
- ❑ Suggested sampling time: 15 min for STEL, 8 hrs for PEL measurements

Note: The pressure drop across the XPoSure Sampling Cartridge permits flow rates of up to 1.5 L/min with personal sampling pumps.

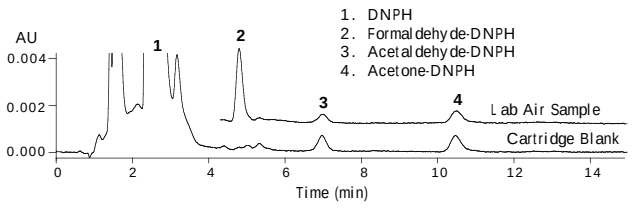
Step 2. Elute Sample from Cartridge

- ❑ To prepare a sample for analysis, fill a 10-cc, Luer-tipped syringe with acetonitrile [CH_3CN], and connect the female end of the cartridge to the syringe tip.
- ❑ Using the syringe plunger, push 10 mLs of CH_3CN through the cartridge at a rate of ≤ 3 mLs/min. Collect eluate in a 10-mL volumetric flask.
- ❑ Fill the volumetric flask to the mark with CH_3CN and mix.
- ❑ Analyze a portion of this solution by HPLC.

Step 3. Analyze by HPLC

Column: Symmetry® C_{18} Column, 3.9x150 mm [P/N WAT046980]
Mobile Phase: 45/55 CH_3CN/H_2O (v/v)
Flow Rate: 1.3 mL/min (isocratic)
Detection: UV at 360 nm
Sample Injection Volume: 20µL

Lab Air Containing 20 ppb Formaldehyde – 22.5-L Air Sample



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