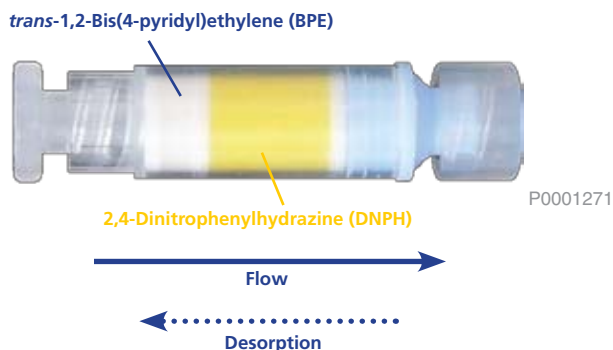


BPE-DNPH* for Simultaneous Determination of Ozone and Aldehydes

Cat. Nos. 54269-U and 54270-U

Introduction



Our BPE-DNPH cartridge is a two-bed air-sampling device, which offers several advantages over traditional DNPH products for sampling carbonyls in ambient, industrial and indoor atmospheres, particularly where there is a need to measure ozone or scrub it from your sample. Unlike other available ozone-scrubbing devices, the BPE-DNPH cartridge is not affected by high humidity.

As the air sample enters the cartridge, it comes into contact with the first bed which contains *trans*-1,2-bis-(4-pyridyl) ethylene (BPE). Ozone is trapped by the BPE particles and produces pyridine-4-aldehyde. Like traditional DNPH cartridges, carbonyls are trapped onto the second bed, which contains a high purity silica adsorbent coated with 2,4-dinitrophenylhydrazine (2,4-DNPH) where they are converted to hydrazone derivatives. The derivatives are eluted from the cartridge using one of two selected methods. The first method describes the procedure for the Simultaneous Determination of Ozone and Aldehydes, the second method (not described) is the traditional method where derivatives are eluted from the cartridge with acetonitrile and analyzed by HPLC.

Benefits

- Combined ozone and aldehyde analysis
- Integrated ozone scrubber
 - No extra connections
 - No leaking cartridges
- High purity adsorbents for better accuracy in trace analysis
- Low background for better accuracy in trace level analysis
- Individual packaging in zip seal bag to maximize sample integrity

*Patent Pending

Specifications

| | |
|-----------------|---|
| Adsorbent: | Chromatographic grade silica coated with: |
| | DNPH: 2,4-dinitrophenylhydrazine |
| | BPE: <i>trans</i> -1,2-bis-(4-pyridyl) ethylene |
| Capacity: | Carbonyl capacity: 75 µg formaldehyde equivalent |
| Ozone capacity: | 26 µg |
| Background: | HPLC-UV VIS @ 360 nm |
| | Formaldehyde <0.05 µg/cartridge |
| | Acetaldehyde <0.05 µg/cartridge |
| | Acetone <0.20 µg/cartridge |
| | Other Aldehydes <0.20 µg/cartridge |
| | Pyridine-4-aldehyde <0.20 µg/cartridge (this corresponds to <0.05 µg ozone/cartridge) |
| Pressure Drop: | <6 inches water at 200 mL/min. |
| Storage: | Refrigerate (4 °C); protect from light |
| Shelf Life: | 12 months |

Method: Simultaneous Determination of Ozone and Aldehydes

Ascentis® C18 or Ascentis RP-Amide columns are recommended to achieve the best results.

Notes:

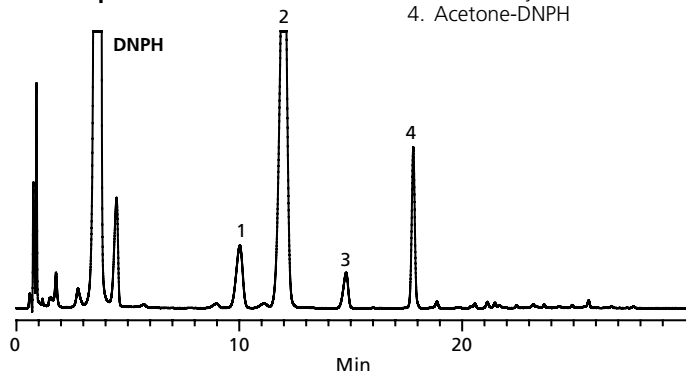
1. Pyridine-4-aldehyde-DNPH exhibits limited solubility in acetonitrile. An acetonitrile/DMSO (70:30 v/v, 3 mL) mixture should be used to elute the cartridges. **When only ozone scrubbing is needed, acetonitrile alone can be used to elute the cartridges.** Elution can be performed by a luer syringe pushing the solvent through the cartridge or connecting an empty SPE tube to the cartridge as a solvent reservoir and elute by gravity (e.g. in an SPE elution rack).
2. The extraction solution should be allowed to set for a minimum 2 hours at room temperature prior to HPLC injection. This is to allow sufficient time for pyridine-4-aldehyde to react with DNPH.
3. With water/acetonitrile mobile phase systems, the pyridine-4-aldehyde-DNPH peak may be broad. This is remedied by using 2 mM ammonium acetate solution as the aqueous portion of the mobile phase.
4. On a C18 or RP-Amide HPLC column, the elution order of formaldehyde-DNPH and pyridine-4-aldehyde-DNPH is dependent on the mobile phase composition.

| | |
|--|--|
| 65% Acetonitrile/35% 2 mM NH ₄ OAc: | Pyridine-4-aldehyde-DNPH elutes first. |
| 50% Acetonitrile/50% 2 mM NH ₄ OAc: | Coelution. |
| 35% Acetonitrile/65% 2 mM NH ₄ OAc: | Formaldehyde-DNPH elutes first. |

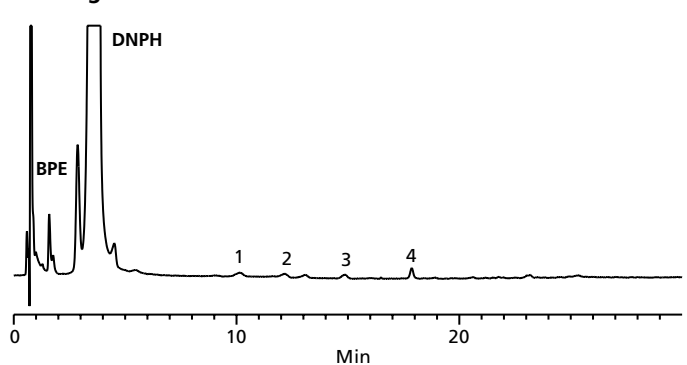
column: Ascentis C18, 15 cm x 4.6 mm I.D., 5 µm particles
 mobile phase: 35/65 acetonitrile/2 mM ammonium acetate (10 min.),
 gradient to 75% acetonitrile at 25 min. (5 min. hold)
 flow rate: 1.9 mL/min.
 det.: UV 360 nm
 injection: 20 µL

1. Formaldehyde-DNPH
2. Pyridine-4-aldehyde-DNPH
3. Acetaldehyde-DNPH
4. Acetone-DNPH

Air Sample



Cartridge Blank



G004279, 4280

Ordering Information

| Description | Pkg. Qty. | Cat. No. |
|--|-----------|----------|
| Cartridges | | |
| BPE-DNPH Rezorian™, 3 mL, 90/260 mg | 10 | 54269-U |
| BPE-DNPH Rezorian, 3 mL, 90/260 mg | 50 | 54270-U |
| Calibration Standards | | |
| Pyridine-4-aldehyde-DNPH, 1 mM, 2 mL in acetonitrile:DMSO (80:20) | 3 | 40081-U |
| Accessories | | |
| Male Luer Fitting To 1/8" | 20 | 21016 |
| Male Luer Fitting To 3/16" | 20 | 23364 |
| Male Luer Fitting To 1/4" | 10 | 24856 |
| Female Luer Coupler | 20 | 21015 |
| Visidry™ Female Luer Plug | 12 | 57098 |
| Filtration Column w/o Frit, 6 mL | 30 | 57242 |
| Elution Rack | 1 | 21043-U |
| Analytical Columns | | |
| Ascentis C18 | | |
| 15 cm x 4.6 mm I.D., 5 µm | 1 | 581324-U |
| 15 cm x 4.6 mm I.D., 3 µm | 1 | 581322-U |
| Ascentis RP-Amide | | |
| 15 cm x 4.6 mm I.D., 5 µm | 1 | 565324-U |
| 15 cm x 4.6 mm I.D., 3 µm | 1 | 565322-U |

Trademarks

Ascentis, Rezorian, Visidry — Sigma-Aldrich Biotechnology LP