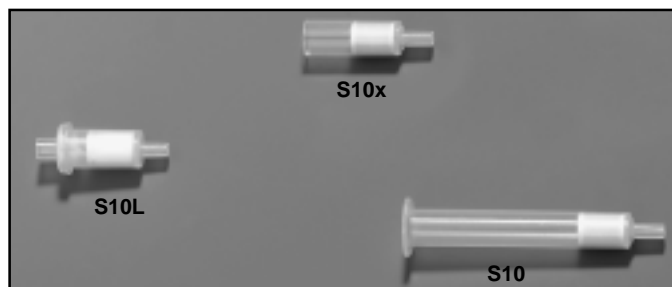


# LpDNPH S10, S10x, S10L Cartridges

## Product Specification



897-0036

LpDNPH cartridges are air sampling devices designed for sampling carbonyls (e.g., formaldehyde) in ambient, indoor, and industrial atmospheres. Carbonyls are trapped on a high purity silica adsorbent coated with 2,4-dinitrophenylhydrazine, where they are converted to the hydrazone derivatives. The derivatives are eluted from the cartridge in acetonitrile and are analyzed by HPLC.

LpDNPH cartridges feature:

- low pressure drop, to enable use at high sampling rates (1.5-2L/min), even with personal sampling pumps
- high purity adsorbent, for better accuracy in trace analyses
- individual packaging, for maximum sample integrity
- bar code labels, for fast and accurate sample identification

### S10 Cartridge (Figure A)

The unique solid phase extraction configuration makes the S10 cartridge easy to use in the field and in the laboratory. Reusable adapters are available to connect the cartridge to the sampling pump. The reservoir eliminates the need to attach a syringe for sample extraction/elution. Sampling flow should be in the opposite direction of elution flow.

### S10x Cartridge (Figure B)

The S10x cartridge is shorter than the S10 cartridge, to fit automated samplers such as those made by XonTech, Inc. and ATEC Atmospheric Technology. Use in a XonTech unit requires a special, reusable adapter (Cat. No. 505307) to provide the necessary seal. In this instance air sampling flow will be in the direction opposite that in an S10 cartridge, to accommodate the instrument's flow pattern.

### S10L Cartridge (Figure C)

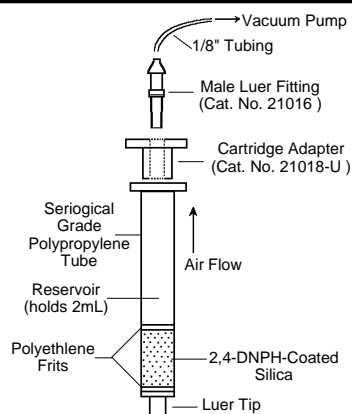
The S10L cartridge is for users who prefer the shorter dimensions and do not need an adapter for sampling. The cartridge is reversible, and is eluted by connecting it to a syringe barrel\* that acts as a reservoir for gravity-fed elution solvent.

### LpDNPH Ozone Scrubber

The ozone scrubber is a closed polypropylene tube, similar to an S10L cartridge, containing high purity potassium iodide. KI traps ozone, which is frequently present in sampling atmospheres and can create negative formaldehyde interference in DNPH-coated devices. When used in front of any LpDNPH cartridge, the disposable ozone scrubber eliminates ozone associated interference.

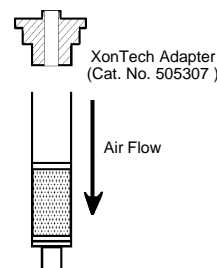
\* We recommend a 6mL polypropylene solid phase extraction tube (no SPE packing or frits), Cat. No. 57242.

Figure A. LpDNPH S10 Cartridge



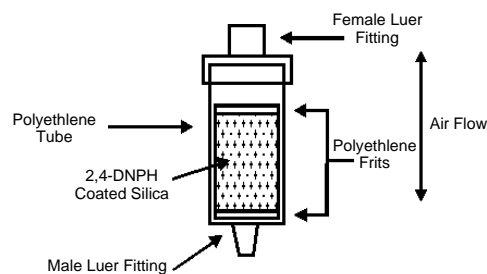
94-0142

Figure B. LpDNPH S10x Cartridge



797-0457

Figure C. LpDNPH S10L Cartridge



797-0014

## Method Applications

US EPA TO11 – Method for the Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC)

US EPA IP-6A – Determination of Formaldehyde and Other Aldehydes in Indoor Air Using a Solid Adsorbent Cartridge

US EPA – Technical Assistance Document for Sampling and Analysis of Ozone Precursors

ASTM D5197 – Standard Test Method for Determination of Formaldehyde and Other Carbonyl Compounds in Air (Active Sampler Methodology)

Priced far below comparable sampling devices for carbonyls, LpDNPH cartridges are an excellent value.

## LpDNPH Cartridge Specifications

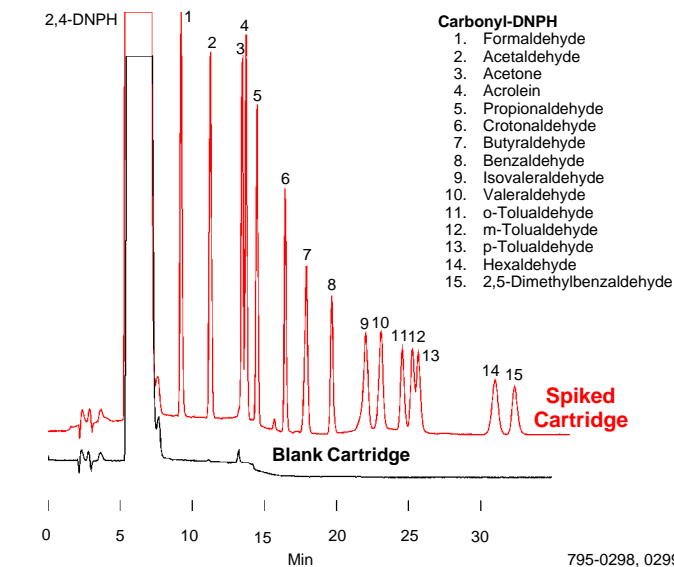
- Adsorbent:** chromatographic grade silica coated with 2,4-dinitrophenylhydrazine (DNPH)
- Particle Size:** 150-250µm (60/100 mesh)
- DNPH Loading:** 0.29% (1 mg/cartridge)
- Bed Weight:** 350mg (approximate)
- Capacity:** 75µg formaldehyde (approximate)
- Length:** S10: 7.4cm; S10x: 3.8cm; S10L: 4.0cm
- Background:** <0.1µg formaldehyde (per cartridge)  
<0.1µg acetaldehyde  
<0.5µg acetone
- Pressure Drop:** <7kPa at 1.5L/min (<28 inches water/<2.1 inches mercury)
- Storage:** refrigerate (4°C), protect from light
- Shelf Life:** 12 months

## Sample Collection/Desorption

Pass air through cartridge in direction of arrow at a flow rate of up to 2 liters/minute. Elute cartridge with 5.0mL acetonitrile. Analyze eluate by HPLC (Figure D).

## Figure D. Carbonyls Analysis

Sample:	5µg each carbonyl-DNPH introduced onto LpDNPH S10 cartridge Cartridge eluted with 5.0mL acetonitrile
Column:	<b>SUPELCOSIL LC-18, 25cm x 4.6mm ID, 5µm particles</b>
Cat. No.:	<b>58298</b>
Mobile Phase:	A – acetonitrile:tetrahydrofuran:water, 30:10:60 B – acetonitrile:water, 60:40 0% B for 1 min, linear gradient to 100% B over 10 min, hold
Flow Rate:	1.5mL/min
Det.:	UV, 360nm
Inj.:	25µL of extract



## Bar Code Labels (Cat. No. 21012)

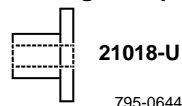


## Lapel Clip (Cat. No. 21019-U)

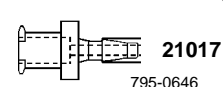


## Hardware

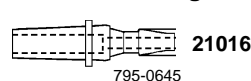
### Cartridge Adapter



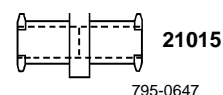
### Female Luer Fitting



### Male Luer Fitting



### Female Luer Coupler



## Ordering Information:

Description	Cat. No.
<b>LpDNPH Cartridges*</b>	
S10, pk. of 10	<b>21026-U</b>
S10, pk. of 50	<b>21014</b>
S10x, pk. of 10	<b>505293</b>
S10L, pk. of 10	<b>505358</b>
<b>S10 Starter Kit</b>	
Ten S10 cartridges, plus male luer fittings and reusable adapters for air sampling pumps	<b>21024-U</b>
<b>Connectors</b>	
Cartridge adapters, pk. of 10	<b>21018-U</b>
XonTech adapters, pk. of 10	<b>505307</b>
Male luer fittings, pk. of 20	<b>21016</b>
Female luer fittings, pk. of 20	<b>21017</b>
Female luer couplers, pk. of 20	<b>21015</b>
Reservoirs (6mL filtration tubes), pk. of 30	<b>57242</b>
Ozone scrubbers, pk. of 10	<b>505285</b>
Lapel clips, pk. of 6	<b>21019-U</b>
Bar code labels, 100 numbers	<b>21012</b>
<b>TO11/IP-6A Aldehyde/Ketone-DNPH Mix</b>	
15µg/mL each carbonyl in acetonitrile, 1mL	<b>47285-U</b>
<b>SUPELCOSIL™ LC-18 HPLC Column</b>	
25cm x 4.6mm, 5µm particles	<b>58298</b>

\* Each package of cartridges includes instructions and bar code labels. A certificate of analysis is available on request.

LpDNPH S10 cartridge configuration, capacity, or silica adsorbent can be modified on request.

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