



CARTRIDGE FOR ANALYSIS of Organic Compounds in Drinking Water



ENVIRO-CLEAN® METHOD 525.2

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Method 525.3: Written within the official EPA method are UCT's Enviro-Clean® application note and data. Designed for US EPA Methods 525.2 and 525.3. This fast-flow cartridge can significantly increase laboratory sample turnaround time compared to traditional SPE cartridges.

Product Benefits

- Fast flow rates for rapid and efficient analyte capture
- Consistent lot-to-lot reproducibility
- PTFE frits eliminate analyte loss
- Cartridge manufactured from UCT polypropylene reducing a potential source of interferences
- Packaged in Mylar to maintain product cleanliness

Product Features

- Proprietary bonded C18 sorbent
- 80 mL polypropylene cartridge may be used with automated systems
- Can be used with single or multi-station manifold systems
- Each cartridge contains 1500 mg of active C18 sorbent ensuring high analyte loading without breakthrough

Method 525.2 Analytes

This method's analyte list comprises over 120 compounds representative of several classes of pesticides, polynuclear aromatic hydrocarbons, PCBs, phthalates, adipates, and other drinking water pollutants. Analyte recoveries range from 70-130%. Refer to the published method for compound-specific MDLs.

The following data was determined using Independent lots of ECUNI525.

TABLE OF COMPOUNDS

Tested Using Method 525.2 and the ENVIRO-CLEAN® Universal 525 Cartridge

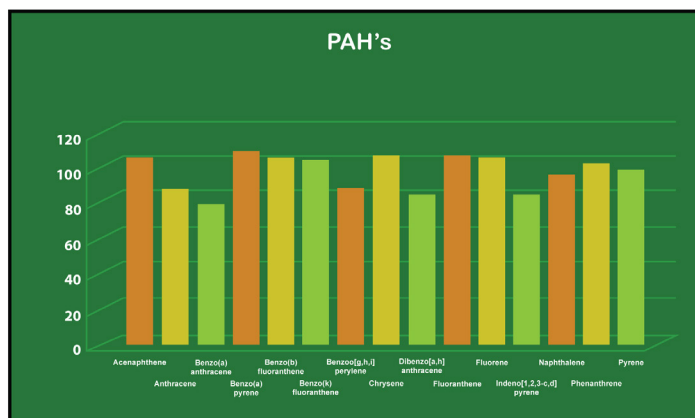
Analytes	% Rec	Analytes	% Rec
1,3-dimethyl-2-nitrobenzene	98	Endrin Aldehyde	97
2,4-dinitrotoluene	83	Endrin Ketone	90
2,6-dinitrotoluene	78	EPTC	102
4,4'-DDE	91	Ethoprophos	109
4,4'-DDT	94	Etridiazole (terrazole)	97
4,4'-DDD	94	Fenarimol	70
Acetochlor	115	Heptachlor	79
Alachlor	99	Heptachlor Epoxide Iso A	116
Aldrin	77	Hexachlorobenzene	94
Ametryn	95	Hexachlorocyclopentadiene	82
Atraton	84	Hexazinone (Velpar)	105
Atrazine	111	Metalochlor	111
BHC, alpha	108	Methoxychlor	123
BHC, beta	97	Methyl Paraxon (Parathion)	115
BHC, delta	109	Metribuzin	109
BHC, gamma	102	Mevinphos (phosdrin)	117
Bromacil	126	MGK 264	121
Butachlor	113	Molinate	114
Butylate	103	Napropamide (Devrinol)	115
Caffeine	90	Prometon	78.6
Carboxin	103	Prometryn	110
Chlordane, alpha	97	Pronamide	101
Chlordane, gamma	94	Propachlor	113
Chlordane, trans nonachlor	115	Propazine (propyzamide)	105
Chlorneb	113	Simazine	91.4
Chlorobenzilate	118	Simetryn	93
Chlorpropham	130	Stirofos (tetrachlorvinphos)	126
Chlorpyrifos (Dursban)	107	Tebuthiuron	85
Chlorthalonil	117	Terbacil	120
Cyanazine (Bladex)	126	Terbutryn	103
Cycloate	111	Triademefon	98
Diphenamid	119	Trifluralin	82
Disulfoton	92.1	Trifluran	83
Disulfoton Sulfone	108	Turbufos	95
Endosulfan I	116	Vernolate	107
Endosulfan sulfate	114		
Endrin	88		

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PAHs

% Rec

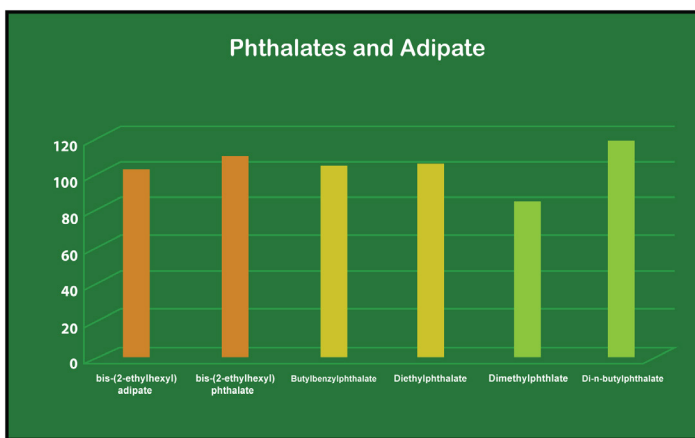
Acenaphthene	99.1
Anthracene	80
Benzo(a)anthracene	75.4
Benzo(a) pyrene	105
Benzo(b) fluoranthene	98
Benzo(k) fluoranthene	95.7
Benzo[g,h,i] perylene	83.1
Chrysene	100
Dibenzo[a,h]anthracene	77.4
Fluoranthene	100
Fluorene	99.7
Indeno[1,2,3-c,d] pyrene	77.4
Naphthalene	90.3
Phenanthrene	96.9
Pyrene	94.6



Phthalates and Adipate

% Rec

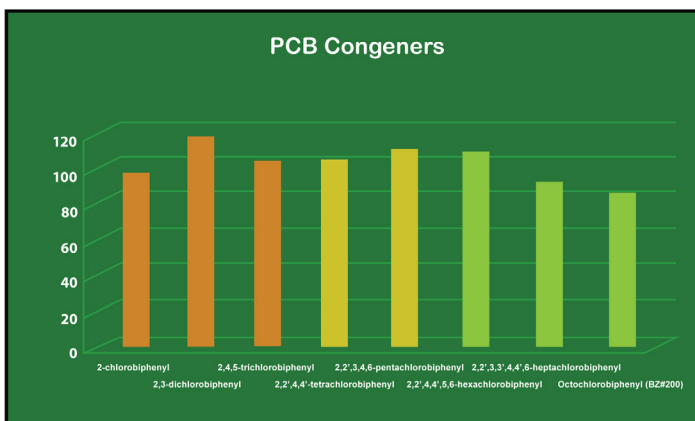
bis-(2-ethylhexyl)adipate	95.1
bis-(2-ethylhexyl)phthalate	104
Butylbenzylphthalate	97.1
Diethylphthalate	99.1
Dimethylphthalate	78.6
Di-n-butylphthalate	113



PCB Congeners

% Rec

2-chlorobiphenyl	93
2,3-dichlorobiphenyl	113
2,4,5-trichlorobiphenyl	97
2,2',4,4'-tetrachlorobiphenyl	98
2,2',3,4,6-pentachlorobiphenyl	104
2,2',4,4',5,6-hexachlorobiphenyl	103
2,2',3,3',4,4',6-heptachlorobiphenyl	85
Octochlorobiphenyl (BZ#200)	79



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EPA Method 525.2 Revision 2.0

Determination of Organic Compounds in Drinking Water by
Liquid-Solid Extraction and Capillary Column Gas Chromatography/Mass Spectrometry

Method Summary

Adjust the pH of the one-liter water sample to pH <2 using 6N HCL before passing through the 525 cartridge (ECUNI525). Elute the analytes from the cartridge with ethyl acetate and methylene chloride. Reduce the extract volume to 1.0 mL and analyze by GC/MS.

Atraton and prometon do not extract well from water at pH 2. Determination of these analytes requires a separate sample dechlorinated with sodium sulfite but without acid. These analytes will recover well with a neutral sample pH.

1. Rinse the extraction apparatus and cartridge

- Rinse the cartridge with 5 mL of ethyl acetate (EtAc) and 5 mL of methylene chloride (MeCl₂)
- Allow the cartridge to dry for 3 minutes under full vacuum pressure

2. Condition Cartridge

- Add 10 mL of methanol to the cartridge
- Draw a small amount through the cartridge using vacuum
- Do not allow the methanol to elute below the cartridge's top frit
- Allow the methanol to soak for about 1 minute
- Immediately add 10 mL of deionized water to the cartridge and draw most of the water through, leaving 3 to 5 mm on the top of the cartridge frit

3. Extraction

- Add 5 ml of methanol to the water sample and mix well
- Re-check the sample pH. The sample must be pH 2 for recovery of most analytes
- Add the water sample to the cartridge and, under vacuum, filter at a rate of approximately 50 mL per minute or less (slower will provide higher recoveries). Draw sample through at a fast drip, but not a stream
- After the sample has passed through the cartridge, dry the cartridge under full vacuum for 10 minutes

Note: Exceeding a 10-minute dry time could result in low recoveries. For faster drying, remove the cartridge and tap the excess moisture from the bottom of the cartridge before continuing vacuum drying.

6 Station Manifold Info

Description

6 station manifold
Glass cartridge adaptor
Bottle holder
Vacuum pump
Waste trap

Part

ECUCTVAC6
ECUCTADP
ECUNIBHD
ECROCKER400
ECUCTTRAP20



UCT carries all the parts needed to run the 525.2 extraction.

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4. Elution

- a) Insert a collection vial in the manifold
- b) Add 5 mL of EtAc to the sample bottle
- c) Rinse the sample bottle thoroughly
- d) Transfer the solvent to the cartridge
- e) Draw half of the solvent through cartridge and then release the vacuum pressure. Allow the remaining solvent to soak in the cartridge for about 3-5 minutes
- f) Draw the remainder of the solvent through the cartridge under vacuum and collect
- g) Repeat the solvent rinse of the sample bottle with 5 mL of MeCl₂
- h) Add the solvent to the cartridge and allow the solvent to soak for 3 - 5 minutes
- i) Draw the remainder of the solvent through the cartridge under vacuum pressure and collect
- j) *Recommended Option:* Using a disposable pipette, rinse down the sides of the cartridge and bottle holder with another 5mL aliquot of MeCl₂
- k) Add the rinse to the cartridge, soak for 3 minutes, and then draw through and collect

5. Dry the extract

- a) Dry the extract using 5 – 7g. of granular sodium sulfate anhydrous in a column or funnel
- b) After passing the extract through the sodium sulfate, rinse the extract vial and sodium sulfate with 5+ mL of MeCl₂ and collect the combined extract in the concentrator tube.
Note: Complete rinsing of the sodium sulfate is necessary for Aldrin recovery
- c) Concentrate the extract to ~1 mL (no less than 0.5 mL.) under a gentle stream of nitrogen at 40 C, being careful not to spatter the contents
- d) *Recommended:* Add a recovery solution of terphenyl-D 14 to the extract to monitor the internal standard recoveries
- e) Make any final volume adjustments with ethyl acetate.

Note: Do not concentrate to <0.5 mL, or loss of analytes could occur. Rapid extract concentration could result in the loss of low molecular weight analytes.

6. Analyze by GC/MS

Revision 2.0, 1995. Method authors: Eichelberger, J. W., Behymer, T. D. Budde, W. L., Munch, J., National Exposure Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH 45268

This summary highlights major steps in the 525.2 method. Anyone needing complete details about the preparation and composition of reagent solutions can reference the EPA 525.2 method. It is available as a part of Supplement 11 from National Technical Information Service (NTIS), Springfield, VA 22161; publication PB 92 207703. (800) 553-6847 or at www.epa.gov/safewater/methods/methods.html

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SHIPMENTS

Normal processing is within 24 hours after receipt of an order. Unless special shipping requests have been made, our trained staff will send all orders by UPS Ground service. The appropriate shipping charges (freight & insurance costs) will be added to the invoice, unless otherwise instructed by the customer.

SPECIAL PRICING

We offer special pricing for volume purchases and standing orders. These discounts apply to bonded phase extraction column purchases only. Please call a sales representative for more information on special pricing qualifications.

RETURN POLICY

Our Quality Manager will handle all returns. Before returning merchandise, please call to obtain a return authorization number from the quality manager. We will need to know the reason for the return, date of purchase, purchase order number and invoice number in order to issue a return authorization number. Return merchandise must be received before a credit can be issued. Returns will not be accepted after 90 days. A restocking fee of 25% of the price paid, or a minimum of \$25.00 (whichever is greater) will be charged on all returns.

WARRANTY

All products manufactured by UCT are guaranteed against defects in materials and workmanship for a period of 90 days after shipment. UCT will replace any items that prove to be defective during this time period. The exclusive remedy requires the end user to first advise UCT of the defective product by phone or in writing and must include order number, the lot number and the shipping date.

To initiate this action, photographs of the product, including packaging and labeling of the containers, must be submitted to the UCT Representative for approval. With approval a return authorization can be initiated, and must be received within 30 days. Once the materials arrive at UCT a further inspection of the materials must be completed and accepted by our Quality Manager prior to further action of credits or replacement. UCT's total liability is limited to the replacement cost of UCT products.

This warranty does not apply to damage resulting from misuse.

Placing An Order

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