PALL Life Sciences

Envirochek™ and Envirochek HV Sampling Capsules and Accessories

For the concentration and recovery of *Cryptosporidium* and *Giardia* cysts from source or finished water

- Typically greater than 70% recovery of target organisms. Capsules replace traditional string wound filter method and increase capture and recovery of organisms by 15 times.
- Capsule method results in a smaller pellet after elution, requiring less analysis time and cost.
- Disposable design eliminates false positives from cross-contamination.
- The 1 µm pore size membrane eliminates false negatives for 100% collection of *Cryptosporidium* and *Giardia*.
- Simple and safe capsules eliminate contact with organisms. No filter holder assembly or cleaning required, and the self-contained capsule means that the potentially contaminated filter element does not need to be handled or cut apart.
- Saves time by allowing the processing of multiple samples at the same time. Process up to eight samples at one time with Pall's Laboratory Shaker.

- Capsule method does not affect the viability of the organisms like harsh chemicals used in other techniques.
- Serialized for traceability.
- Approved by regulatory agencies worldwide, including U.S. EPA methods 1622 and 1623, United Kingdom DWI standard operating protocols, and ISO/DIS 15553.

Applications

Envirochek capsules are used for collection and recovery of *Cryptosporidium* oocysts and *Giardia* cysts in both finished and source water, including surface water, municipal water supplies, samples in containers, or wells.

- **Envirochek capsules** are validated and listed in U.S. EPA Methods 1622 and 1623, and used for sampling source water for *Cryptosporidium* and *Giardia*. Together, the EPA method and Envirochek capsule present a major improvement over the previous string wound cartridge method. The Envirochek capsule is also listed in ISO/DIS 15553.
- **Envirochek HV capsules** are designed for sampling up to 1,000 liters or more of treated water and validated for up to 50 liters of source water. The Envirochek HV incorporates a track etched membrane designed to process high volumes of treated water while maintaining high recovery characteristics (see Tables 1 and 2) and meeting U.S. EPA requirements. Envirochek HV capsules are also approved by the United Kingdom DWI standard operating protocols for monitoring drinking water for *Cryptosporidium*.

In the Envirochek sampling capsule method, the water sample to be tested is passed through the capsule either by sampling at the source or by taking a "grab" sample back to the laboratory and filtering it on the bench top. The capsule is then filled with an elution solution, placed on a laboratory shaker, and vigorously shaken to elute any captured oocysts and cysts. Up to eight capsules can be processed at once using Pall's Laboratory Shaker. The elution solution is decanted and centrifuged to a pellet for further examination by the user's method of choice.

Table 3 shows the time savings from using the patented Envirochek sampling capsule and method. This simple process saves time and money by reducing steps and allowing the technician to attend to other tasks. The disposable capsule eliminates the arduous cleaning required by other products that use reusable filter housings.

Specifications

Materials of Construction

Envirochek™ Capsule (PN 12110, 12107)
Filter Media: Supor® membrane, hydrophilic polyethersulfone
Housing: Polycarbonate
Filter Support Material: Polypropylene
End Caps: Green vinyl
Adhesive: Urethane

Envirochek HV Capsule (PN 12096, 12097, 12098, 12099)
Filter Media: Polyester, hydrophilic membrane
Housing: Polycarbonate
Filter Support Material: Polypropylene
End Caps: Blue vinyl
Adhesive: Urethane

Effective Filtration Area

1,300 cm^2

Dimensions

Length: 21.6 cm (8.5 in.)
Diameter: 6.1 cm (2.4 in.)

Inlet/Outlet Connections

12.7 mm (1/2 in.) straight hose barb

Elution Capacity

Minimum of 127 mL

Maximum Operating Pressure

Envirochek Capsule (PN 12110, 12107)
2.1 bar (30 psid) at 21 °C (70 °F)

Envirochek HV Capsule (PN 12099, 12097, 12096)
4.2 bar (60 psid) at 21 °C (70 °F)

Sterilization

Provided non-sterile

Performance

Table 1
IPR and MS/MSD Validation Data for *Cryptosporidium* Recovery Using Method 1622 and the Envirochek HV Capsule with 50 Liters Source Water Samples

Sample Description	Lab	Sample Turbidity (ntu)	Spike Dose (#)	Mean % Rec.	RSD or RPD
IPR	1	< 0.1	95.9	44.9	9.5%
IPR	2	0.05	95.9	67.6	17.0
IPR	3	0.03	95.9	60.5	18.8
IPR Acceptable Range				**24-100**	**< 55%**
Matrix Blank	1	10.6	0		
MS1	1	9.4	95.9		
MS2	1	10.1	95.9	29.2	0.0%
Matrix Blank	2	2.1	0		
MS1	2	2.1	95.9		
MS2	2	2.1	95.9	72.0	20.3
Matrix Blank	3	1.8	0		
MS1	3	1.8	95.9		
MS2	3	1.8	95.9	56.3	11.1
IPR Acceptable Range				**13-111**	**< 61%**

IPR = Initial Precision and Recovery
MS/MSD = Matrix Spike/Matrix Spike Duplicate
RSD = Relative Standard Deviation
RPD = Relative Percent Difference

Table 2
IPR Tier 1 Validation Data for *Cryptosporidium* Recovery Using Method 1622 and the Envirochek HV Capsule for 1,000 Liters Finished Drinking Water Samples

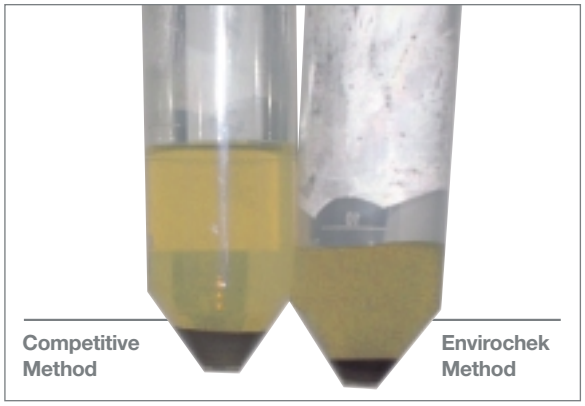
Sample Description	Sample Turbidity (ntu)	Spike Dose (#)	% Rec.	Mean % Rec.	RSD or RPD
Reagent Blank	< 0.1	0			
IPR2	< 0.1	99.3	68.5		
IPR2	< 0.1	99.3	58.4		
IPR3	< 0.1	99.3	60.4		
IPR4	< 0.1	99.3	61.4	62.2	7.0
IPR Acceptable Range				**13-143**	**< 67%**

Table 3
Time Savings

	Approximate Time to Process Eight Samples (Minutes)	
Step	**Envirochek Capsule**	**Other Major Protocol**
Set-up	5	50
Elution	55	240
Concentration	65	240
Cleaning Equipment	0	320
Total Time	**125**	**850**
Time/Test (minutes)	**16**	**106**

Figure 1
Envirochek™ HV Capsule Produces a Smaller Pellet Size When Sampling Turbid Water, Reducing Time and Cost for Analysis

A smaller pellet following concentration of the sample can reduce cost by eliminating the need for additional ISM kits and fewer slides. Testing time is reduced because additional slides do not have to be prepared and visually analyzed. The Envirochek HV capsule is designed to trap 100% of *Cryptosporidium* and *Giardia* while allowing finer particulate to pass through the filter that would add to pellet size. Each capsule is integrity tested to assure no bypass, providing highly accurate recovery rates as well as time and cost savings.



Laboratory Shaker

For effective elution of *Cryptosporidium* oocysts and *Giardia* cysts off Envirochek sampling capsules

- Meets U.S. EPA requirements for Methods 1622 and 1623 for recovery of organisms.
- Processes up to eight Envirochek sampling capsules at one time.
- Accurate and consistent shaking speed with a digital read-out.
- Simulates human wrist action to save time, reduce fatigue, and provide consistent results.
- CE marked for European community use.
- UL-listed power cord also included.

Applications

- Specifically designed for use with Pall's Envirochek sampling capsules for the elution of *Cryptosporidium* oocysts and *Giardia* cysts. Add an elution buffer to the capsule and the shaking action elutes the captured organisms off the membrane surface for further concentration and identification.
- Shaker accommodates up to eight Envirochek sampling capsules at one time.

Specifications

Timer
Includes 30-minute timer, calibrated at five minute intervals, or may be run continuously.

Shaking Speed
Variable speed regulation from 100 to 700 osc/minute (1,400 vibrations). Speed is monitored within 1 rpm of setpoint by digital tachometer.

Stroke
8 mm

Set-up
8 clamps included for attachment of Envirochek sampling capsules.

Type of Mounting
Benchtop. Suction cup feet prevent creeping.

Load Carrying Capacity
Accepts loads up to 4 kg (9 lb.)

Power Requirements
PN 4821: 115V, 50/60 Hz
PN 4822: 230V, 50/60 Hz
3-wire UL listed power cord

Power Consumption
80 watts

Dimensions
Height: 23 cm (9.1 in.)
Width: 77 cm (30.3 in.)
Depth: 27 cm (10.6 in.)
Weight: 11 kg (24.2 lb.)

Laureth-12

Laureth-12 is a component required in the elution solution. Available in paste form, one 50-gram bottle per package. One bottle has sufficient volume for approximately 200 tests. For the complete formulation, refer to the Envirochek™ HV sampling capsule protocol, PN 33210, or the Pall web site at www.pall.com/lab. The formulation can also be found in U.S. EPA Methods 1622 and 1623.

Ordering Information

Product No.	Description	Packaging
12110	Envirochek sampling capsule	1/pkg
12107	Envirochek sampling capsule, bulk pack, individually bagged	25/pkg
12099	Envirochek HV sampling capsule	1/pkg
12098	Envirochek HV sampling capsule, bulk pack, individually bagged	25/pkg
12097	Envirochek HV sampling capsule, for U.K. DWI	1/pkg
12096	Envirochek HV sampling capsule, for U.K. DWI	25/pkg

Accessories

Product No.	Description	Packaging
4820	Laureth-12 Paste, 50 g bottle	1/pkg
4821	Laboratory shaker, 115 V, 50/60 Hz	1/pkg
4822	Laboratory shaker, 230 V, 50/60 Hz	1/pkg

Reference Literature

- The Envirochek HV Capsule: Recovering *Cryptosporidium* from High Volume Source and Finished Drinking Water Samples, Technical Article, PN 33249
- Envirochek HV Sampling Capsule Protocol, PN 33210

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1/05, 2.5k, GN05.1088 PN 33142