Life Sciences

Envirochek® and Envirochek HV Sampling Capsules

- Designed for the concentration and recovery of *Cryptosporidium sp.* oocysts and *Giardia sp.* cysts.
- Envirochek HV capsule optimized for sampling high volumes of source or treated water.

Ordering Information

Prod. No.	Description	Packaging
12098	Envirochek HV sampling capsule, bulk pack, individually bagged	25/cs
12099	Envirochek HV sampling capsule	1/pkg
12107	Envirochek sampling capsule, bulk pack, individually bagged	25/cs
12110	Envirochek sampling capsule	1/pkg

Specifications

Materials of Construction
Filter Media
12107, 12110: Supor® (polyethersulfone) membrane
12098, 12099: Polyester
Housing: Polycarbonate
End Caps: Vinyl
Filter Support Material: Polypropylene

Pore Size
1.0 µm

Effective Filtration Area
1300 cm^2

Dimensions
Length: 21 cm (8.5 in.)
Diameter: 6 cm (2.4 in.)

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

Maximum Operation Pressure
6.9 bar (690 kPa, 100 psi)

Maximum Differential Pressure
12107, 12110: 2.1 bar (210 kPa, 30 psid) at 21 ºC (70 ºF)
12098, 12099: 4.1 bar (410 kPa, 60 psid) at 21 ºC (70 ºF)

Sterilization
Provided non-sterile

Instructions for Use

This method does not address all of the safety concerns that are associated with pathogen concentration and testing. It is the responsibility of the user of this device and method to determine and employ all applicable safety measures to ensure the safety of themselves and others. Check for regulatory limitations that may apply prior to using this device.

Proper assembly and flow direction is critical to the filter's performance. Improper assembly can result in decreased throughput, lower sediment recoveries and, in extreme cases, damage to the pleated membrane within the device.

Instructions for Use (cont.)

1.0 Materials
- 1.1 Envirochek or Envirochek HV sampling capsule, one capsule per sample. The capsules are not reusable.
- 1.2 Hose-type tubing, 12.7 mm (0.5 in.) I.D.
- 1.3 Clamps
- 1.4 Water meter (flow totalizer)
- 1.5 Flow control valve or flow rate meter with valve
- 1.6 Pump, electric or gasoline powered (if needed)
- 1.7 Laboratory Shaker (Pall Life Sciences PN 4821, 115V; 4822, 230V)
- 1.8 Ice chest or cooler with cold packs
- 1.9 250 mL conical centrifuge tubes
- 1.10 50 mL polypropylene tubes
- 1.11 Elution Buffer
  - 1.11.1 10 mL Laureth-12 solution (see below)
  - 1.11.2 10 mL 1 M Tris, pH 7.4 (see below)
  - 1.11.3 2 mL 0.5 M Ethylenediamine Tetraacetic Acid (EDTA), 2 Na, pH 8.0 (see below)
  - 1.11.4 150 µL Antifoam A
  - 1.11.5 ***Preparation of Laureth-12 Solution***
    Weigh 10 g of Laureth-12 (PN 4820) and dissolve in 90 mL of reagent water using a microwave or hot plate. Dispense in 10 mL aliquots into sterile vials and store at room temperature for up to 2 months or in a freezer for up to a year.
  - 1.11.6 ***Preparation of 1 M Tris, pH 7.4***
    Dissolve 121.1 g Tris in 700 mL reagent water and adjust pH to 7.4 using 1 N HCl or NaOH. Dilute to a final volume of 1000 mL with reagent water and adjust the final pH. Filter-sterilize through a 0.2 µm membrane (Pall Life Sciences PN 4632) into a sterile plastic container and store at room temperature.
  - 1.11.7 ***Preparation of 0.5 M EDTA, 2 Na, pH 8.0***
    Dissolve 186.1 g EDTA, sodiumdihydrate in 800 mL reagent water and adjust to pH 8.0 using 6 N HCl or NaOH. Dilute to a final volume of 1000 mL with reagent water and adjust the final pH using 1 N HCl or NaOH.
  - 1.11.8 **Preparation of Buffer Solution**
    - Add the contents of a 10 mL vial of Laureth-12 solution to a 1000 mL graduated cylinder. Rinse the vial several times to ensure the complete transfer of detergent.
    - Add 10 mL Tris solution, pH 7.4; 2 mL EDTA solution, pH 8.0; and 150 µL Antifoam A to the graduated cylinder.
    - Bring solution to a final volume of 1000 mL with reagent water. The buffer will have an opaque appearance.

2.0 Sample Collection
- 2.1 Retain the vinyl caps provided with the sampling capsule for sample shipping and the elution process.
- 2.2 The exact installation is dependent on whether or not the water is from a pressurized water source. If the source is not pressurized, a pump is required. If a pump is required, the system will appear as in Figure 1a. If a pump is not required, the system will appear as in Figure 1b.

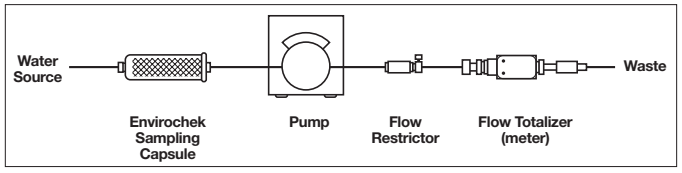

Figure 1a: Sampling system with pump

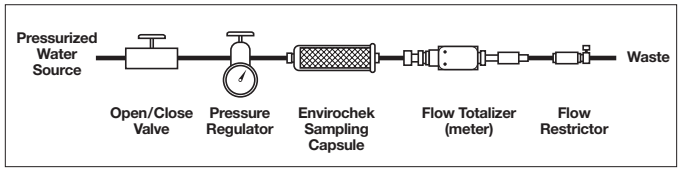

Figure 1b: Sampling system without pump

Instructions for Use (cont.)

- 2.3 Before connecting the sampling system to the pressurized system or sample source, turn the pressurized system or pump on, allowing water to purge residual debris from the water lines for 2 – 3 minutes, or until the turbidity becomes uniform.
- 2.4 Turn off the pressurized source or pump and connect the sampling system without the sampling capsule.
- 2.5 Turn on the pressurized source or pump and adjust the flow rate as recommended by the current approved method for your region.
- 2.6 Allow approximately 2 - 10 L source or reagent water to flush the system.
- 2.7 Install the sampling capsule in line, securing the inlet and outlet ends with the appropriate fittings/clamps.
- 2.8 With a water-resistant marking pen, record the sampling location, name of the person performing the sampling, date, meter reading, and turbidity of the sample on the label provided on the filter housing.
- 2.9 Initiate water flow.
- 2.10 Vent the residual air in the capsule using the vent valve by turning it in a counter clockwise direction. When the filter housing is full of water, quickly close the vent valve.
- 2.11 After you have collected your sample through the sampling capsule, shut off your water source. Allow the pressure to decay until flow stops.
- 2.12 Record the stop time and final meter reading in the appropriate spaces on the label on the filter.
- 2.13 Disconnect the inlet end of the sampling capsule, making sure not to spill any of the water remaining in the capsule. This water is part of your sample.
- 2.14 Seal the inlet of the capsule with the vinyl end cap that was saved from step 2.1.
- 2.15 Loosen the outlet end and allow water to drain as much as possible. Water drainage from the capsule through the outlet is acceptable since the sample has passed through the membrane.
- 2.16 Seal the outlet of the capsule with the vinyl end cap that was saved from step 2.1.
- 2.17 Transport sampling capsules to testing facility according to temperature and hold time requirements listed in current approved method for your region.

3.0 Elution Method
- 3.1 Assemble the Laboratory Shaker with the arms at full extension and the clamps aligned in a vertical position so the capsules will be aligned horizontally, as demonstrated in Figure 2.

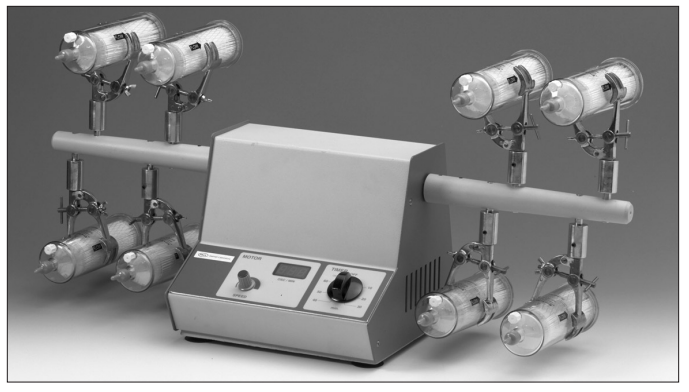

Figure 2: Proper assembly of Laboratory Shaker

- 3.2 Prepare sufficient elution buffer so all the samples to be eluted that day can be eluted with the same stock elution buffer solution. (see 1.11)
- 3.3 Designate a 250 mL conical centrifuge tube for each sample and label with the sample number.
- 3.4 If the upper chamber of the capsule has water remaining in it, pull the remaining fluid through the filter before eluting the filter.
- 3.5 Hold the capsule in a vertical position with the inlet end up by using a ring stand or other means. Remove the vinyl end cap.

If eluting standard volumes of source water, proceed to step 3.6, If eluting high volumes of drinking water continue with step 3.5.1:
- 3.5.1 Fill the sampling capsule with a 5% weight by volume of sodium hexametaphosphate in reagent water.
- 3.5.2 Replace the vinyl end cap on the inlet and securely clamp the sampling capsule on the laboratory shaker.
- 3.5.3 Turn on the shaker, set the speed at approximately 600 rpm, and agitate for 5 minutes.

Instructions for Use (cont.)

3.5.4 Turn off the shaker, remove the sampling capsule, hold upright and remove the vinyl end cap from the outlet.

3.5.5 Loosen the vent valve and allow the sodium hexametaphosphate solution to drain through the capsule membrane and out the outlet.

3.5.6 Tighten the vent valve and replace the vinyl end cap on the outlet of the sampling capsule.

3.5 7 Hold the capsule in the vertical position with the inlet end up by using a ring stand or other means. Remove the vinyl end cap from the inlet.

3.5 8 Repeat steps 3.5.1 through 3.5.7 using reagent water.

3.6 Add elution buffer to the inlet end of the capsule and allow liquid level to stabilize. Sufficient elution buffer should be added to the capsule to ensure the covering of the pleated white filter module by approximately 13 mm (0.5 in.) (see Figure 3). Replace the vinyl end cap to the inlet end of the capsule.

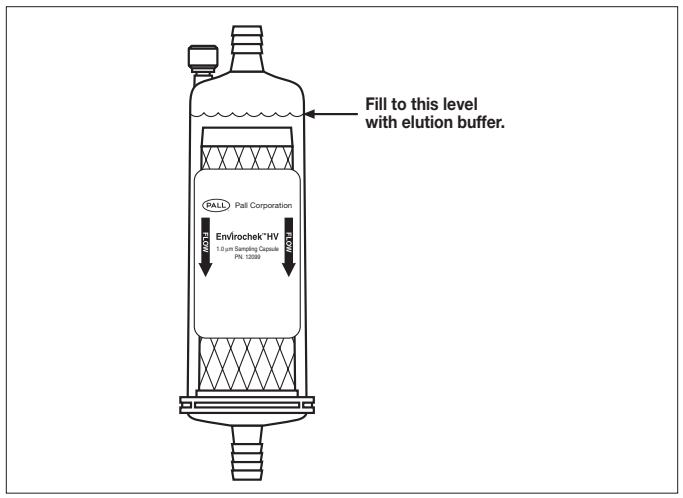

Figure 3: Elution buffer level

3.7 Securely clamp the capsule on the Laboratory Shaker so the vent valve is facing toward you. Make sure the vent valve is in the 12 o'clock position (see Figure 4).

3.8 Turn on the shaker and set the speed at approximately 600 rpm and agitate for 5 minutes.

3.9 Remove the sampling capsule from the shaker. Carefully remove the inlet end cap and decant the contents of the capsule into a 250 mL conical centrifuge tube.

3.10 Add new elution buffer to the inlet end of the capsule and allow liquid level to stabilize. Sufficient elution buffer should be added to the capsule to ensure the covering of the pleated white filter module by approximately 13 mm (0.5 in.) (see Figure 3). Replace the vinyl end cap to the inlet end of the capsule.

3.11 Again, securely clamp the capsule on the Laboratory Shaker so the vent valve is facing toward you. This time make sure the vent valve is in the 4 o'clock position (see Figure 4).

3.12 Turn on the shaker and set the speed at approximately 600 rpm and agitate for 5 minutes.

3.13 Turn off the shaker and loosen the clamp but **do not remove the capsule and decant the elution buffer.**

3.14 Rotate the capsule until the vent valve is in the 8 o'clock position (See Figure 4), secure the capsule in place, and agitate at 600 rpm for 5 minutes.

3.15 As in step 3.9, remove the capsule from the shaker, carefully remove the inlet end cap and decant the contents of the capsule into the same 250 mL conical centrifuge tube labeled for that sample.

Instructions for Use (cont.)

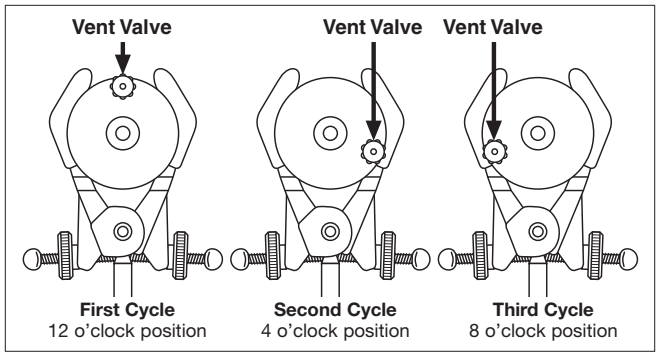

Figure 4: Orientation of sampling capsules during elution

4.0 Concentration: Adjustment of Pellet Volume

4.1 Spin the sample at 1500 x G for 15 minutes. Allow the centrifuge to coast to a stop. DO NOT USE THE BRAKE!

4.2 Record the volume of the pellet with date and time the concentration was completed. Use a Pasteur pipette to carefully remove the supernatant to 5 mL above the pellet. Refer to current approved method for instructions on pellet analysis.

5.0 Detection

5.1 The sample is now ready for the detection stage of the process. Refer to the current approved detection method for your region.

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