

BioSampler

8-hour Sampling of Bioaerosols into Liquid

- Design overcomes problems associated with impinger sampling of bioaerosols
- Allows use of non-evaporating collection liquids for longer sampling times
- Maintains constant sampling efficiency up to 8 hours
- Swirling liquid collection method
 - Significantly reduces particle bounce and re-aerosolization
 - Preserves microorganism integrity and viability
- Collection liquid easily transferred to agar plate for culturing
- Samples can be analyzed by a variety of methods
- Reusable — can be autoclaved

The SKC BioSampler® is a glass collection device that externally resembles an All-glass Impinger (AGI-30†). Internally, BioSampler contains design features that overcome some of the sampling problems associated with using impingers for bioaerosol collection.

- Inlet limits collection of airborne particles to those that would pass through the human nose.
- Three tangential nozzles reduce particle bounce off inner wall.
- Airflow through the nozzles causes the collection liquid to swirl upward on the inner wall and gently remove collected particles. The swirling motion generates few bubbles and minimizes re-aerosolization of particles.

Learn more at www.skcinc.com!



The BioSampler Advantage

- Constant sampling efficiency over longer sampling times

BioSampler: Thicker, non-evaporating liquids such as ViaTrap® mineral oil can be used to maintain constant sampling efficiency over an 8-hour workshift. Longer sampling times increase sample volumes for detecting organisms at lower concentration levels.

Standard Impingers: Typical sampling times with standard impinger liquids are only 1 to 1.5 hours.

- Less particle bounce

BioSampler: Nozzles eject particles at an angle to the sampler's inner wall to reduce particle bounce and preserve aggregates of organisms.

Standard Impingers: Microorganisms are typically damaged by collision with the impinger base plate.

- Decreased particle re-aerosolization

BioSampler: Airflow through three tangential nozzles causes the collection liquid to gently swirl and move particles into the collection liquid without re-aerosolization.

Standard Impingers: The collection liquid tends to bubble violently, causing collected particles to re-enter ambient air.



SCIENCE.
SERVING PEOPLE.

BioSampler

8-hour Sampling of Bioaerosols into Liquid

BioSampler Operation

BioSampler is operated with a sonic flow pump such as the BioLitē. The BioSampler's three nozzles act as critical (sonic) orifices, each permitting 4.2 L/min of ambient air to pass through, resulting in a total flow rate of approximately 12.5 L/min. Collection liquid with a viscosity much higher than water, such as ViaTrap (special mineral oil), can be used with the BioSampler to provide constant collection efficiency over an eight-hour sampling period.

BioSampler Sample Analysis

BioSampler samples provide many analysis options. Contact a laboratory for collection liquid requirements. Visit www.skcinc.com/lab.

- **Growth Culture** quantifies/characterizes airborne cultural bacteria and fungi.
- **Microscopic** enumerates and provides limited identification of total airborne bacteria and fungi.
- **Biochemical Assay** quantifies biological compounds based on reaction to a chemical.
- **Immunoassay** quantifies airborne allergens based on antibodies binding to a specific target antigen.
- **Polymerase Chain Reaction (PCR)** identifies bioaerosols by screening for a specific genus or species.

BioSampler Applications

With BioSampler, locate sources of contamination, identify and measure levels of microorganisms, evaluate effectiveness of control measures, or monitor bioaerosol releases for many applications including:

- Indoor air quality investigations
- Infection control in hospitals and veterinary clinics
- Quantification of microorganisms in agricultural dust
- Biological research
- Infectious disease investigations in public buildings
- Workplace exposures in industries such as pulp and paper mills or wastewater treatment plants



BioSampler set up with BioLitē pump

References

Nevalainen, A., Willeke, K., Liebhaber, F., Pastuszka, J., Burge, H., and Henningson, E., *Bioaerosol Sampling: Aerosol Measurement Principles, Techniques, and Applications*, Van Nostrand Reinhold, New York, 1993, pp. 471-492

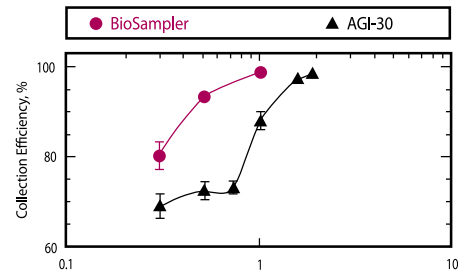
Lin, X., Willeke, K., Ulevicius, V., Grinshpun, S.A., "Effect of Sampling Time on the Collection of All-Glass Impingers," *Am. Ind. Hyg. Assoc. Journal*, v. 58, 1997, pp. 480-488

Macher, J.M., "Evaluation of Bioaerosol Sampler Performance," *Applied Occup. Environmental Hygiene*, v. 12, 1997, pp. 732-738

Buttner, M.P., Willeke, K., Grinshpun, S.A., "Sampling and Analysis of Airborne Microorganisms," *Manual of Environmental Microbiology*, ASM Press, Washington, D.C., 1997, pp. 629-640

Performance Profile

Physical collection efficiency and biological collection efficiency are two performance characteristics that are critical to selecting the proper bioaerosol sampler. BioSampler collection efficiency is close to 100% over a wide range of particle sizes when operated at 12.5 L/min with water or a liquid of similar viscosity. For particles less than 1.0 μm in diameter, collection efficiency decreases to approximately 90% at 0.5 μm (see below).



Test particle: PSL (Polystyrene Latex Beads)

Collection fluid: 20-ml deionized water

Sampling flow rate: 12.5 L/min

Ordering Information

Description	Cat. No.
Deluxe BioSampler System includes 1 BioSampler, 2 additional 20-ml collection vessels with caps, 1 case with mounting rod, 1 ViaTrap [®] (120 ml), 1 BioLitē pump, tubing/adapters, and rotameter	228-9615KD
115 V	
Basic BioSampler System includes 1 BioSampler, 1 additional 20-ml collection vessel with cap, 1 mounting bracket, 1 BioLitē pump, tubing/adapters, and rotameter	228-9615K
115 V	
BioSampler , 3-piece glass, includes inlet section, outlet section, and collection vessel	225-9595
(does not include ground joint cap)	225-9595K4
<i>Inlet and outlet sections are a matched set</i>	225-9593
BioSampler Collection Vessel (bottom) and ground joint cap, for transporting samples	225-9596
20 ml	225-9596A
5 ml	225-9598A
ViaTrap Collection Media[®] , special mineral oil for bioaerosol sampling	225-9598
120 ml	225-9599
500 ml	
950 ml	
BioSampler Mini Kit includes 1 BioSampler, two 20-ml collection vessels (bottoms) with caps, 1 BioSampler case with mounting rod, and 1 ViaTrap [®] (120 ml)	225-9597
Sonic Flow Pump , in protective housing with vacuum gauge and valve to ensure sonic flow performance, supplied without orifices or rotameter, AC operation only	228-9615
115 V, 60 Hz	228-9620
230 V, 50 Hz	
Glass Trap , for area sampling to protect pump, can be used with or without sorbent	225-22
Trap Sorbent , 200 grams, silica gel/activated charcoal sorbent mix to remove vapors	225-22-02
Mounting Bracket , for mounting on BioLitē pump	228-9611

∞ ViaTrap mineral oil may not be suitable for PCR analysis; check with laboratory

Learn more at www.skcinc.com!

SCIENCE.
SERVING PEOPLE.

