

# IOM Sampler

A Gold Standard for Personal Inhalable Particulate Sampling



- **Meets U.S. and international standards**
  - ACGIH sampling criteria for inhalable particulate
  - Preferred sampler for HSE Method MDHS 14/4
  - NIOSH Method 5700 for particulate formaldehyde
  - Australian standard for inhalable particulate
  - Complies with MDHS 25/3 for organic isocyanates (*stainless steel model*)
  - Complies with MDHS 6/3 for lead (*with accessory head*)
  - ISO®/CEN health-related fractions for bioaerosols
  - OSHA equivalent method for particulates not otherwise regulated (PNOR)<sup>‡</sup>
- **Economical and reusable**
- **Small and lightweight**
  - Plastic model weighs less than 2 ounces (55 grams)
- **Efficient particulate sampling up to 100 µm**
- **Maintains sample integrity**
  - Removable 25-mm cassette system eliminates filter handling
  - Cassette and filter are weighed as a single unit to include all collected particles in analysis
- **Sampler and cassette available in stainless steel for chemical analysis**
  - Autoclavable for bioaerosol sampling
  - Ideal for sampling vapor-phase isocyanates

<sup>‡</sup> Reference: OSHA letter November 8, 2011; contact SKC for a copy

\* U.S. Patent No. 4,675,034

## IOM Sampler

The patented\* IOM Sampler, developed by J. H. Vincent and D. Mark at the Institute of Occupational Medicine (IOM) in Scotland, meets the ACGIH sampling criteria for inhalable particulate mass. The IOM Personal Inhalable Sampler is a conductive plastic sampling head that houses a reusable 25-mm filter cassette with specified filter for the collection of inhalable airborne particles. When attached to a personal sampling pump operating at 2 L/min and clipped near a worker's breathing zone, the IOM effectively traps particles up to 100 µm in aerodynamic diameter and closely simulates the manner in which airborne workplace particles are inhaled through the nose and mouth. Because both the cassette and the filter are pre and post-weighed as a single unit, all particles collected (even larger ones) are included in the analysis. The cassette can be cleaned, reloaded with a new filter, and reused.

## IOM Accessories

- **Calibration adapter**  
Easy to use; simple and accurate calibration
- **Cassette**  
Conductive plastic or stainless steel
- **Transport clip and cover**  
Protect loaded filter cassette without IOM body during transportation



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## IOM MultiDust Sampling

Using the IOM Inhalable Particle Sampler with a MultiDust foam disc and filter transforms the IOM into a versatile personal dust sampler, able to sample inhalable and respirable fractions individually or simultaneously. By inserting a MultiDust polyurethane foam (PUF) disc of specific porosity into the inlet of the IOM cassette, respirable particles can be collected on the filter at the back of the cassette. The sample collected on the foam can be weighed with the filter for determination of the inhalable fraction. Analysis is gravimetric. *Only IOMs manufactured after June 2000 are suitable for MultiDust sampling.*

## Size-selective Bioaerosol Sampling

Previously used only for sampling chemical particles, the IOM Sampler with MultiDust foam disc has been tested by the HSE's Health and Safety Laboratory (UK), which has determined it to be an effective size-selective sampler for bioaerosols.

It has been shown that the IOM Sampler, loaded with a user-sterilized polycarbonate filter\* and MultiDust polyurethane foam disc,\* is not only an efficient collector of inhalable and respirable fractions of bioaerosols, but it also better maintains survivability of microorganisms when compared to filter-only sampling. This has been attributed to the MultiDust foam's large surface area and open cell structure, which diffuses airflow to reduce microbial dehydration. Analysis is by growth culture or microscopy.

\* The MultiDust foam disc must be washed and sterilized with UV light and the polycarbonate filter autoclaved before sampling. For optimum results, handle all components of the sampler and media with sterile gloves and forceps before and after sampling.

## References

Mark, D. and Vincent, J. H., "A New Personal Sampler for Airborne Total Dust in Workplaces," *Ann. Occup. Hyg.* Vol. 30, 1986, pp. 89-102

ACGIH Technical Committee on Air Sampling Procedures: *Particle Size-selective Sampling in the Workplace*, ACGIH, Cincinnati, Ohio, 1984

Kenny, L.C., Bowry, A., Crook, B., and Stancliffe, J.D., "Field Testing of a Personal Size-selective Bioaerosol Sampler," *American Occupational Hygiene*, Vol. 43, No. 6, 1999, pp. 393-404

Kenny, L.C., Chung, K.Y.K., Dilworth, M., Hammond, C., Jones, J. Wynn, Shreeve, Z., and Winton, J., "Applications of Low-cost Dual-fraction Dust Samplers," *Ann. Occup. Hyg.*, Vol. 45, No. 1, 2001, pp. 35-42

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## Performance Profile

<b>Flow Rate:</b>	2 L/min
<b>50% Cut-point:</b>	100 µm at 2 L/min inhalable fraction 4.0 µm at 2 L/min respirable (with MultiDust)
<b>Construction:</b>	Molded conductive plastic (polypropylene) or stainless steel
<b>Maximum Operating Temperature:</b>	<b>Plastic IOM and cassette:</b> 212 F (100 C) with no pressure <sup>†</sup> <b>Stainless steel IOM and cassette:</b> 392 F (200 C) - suitable for autoclaving and solvent washing
<b>Filters:</b>	25-mm membrane or fibrous filter
<b>Weight:</b> (plastic model with cassette)	< 2 oz (55 gm)
<b>Analysis:</b>	Gravimetric or chemical (stainless steel model)
<b>Tubing:</b>	1/4-inch ID

<sup>†</sup> The plastic IOM is not suitable for autoclaving or ethylene oxide sterilization.

## Ordering Information

IOM Samplers, use with filter, select from below	Cat. No.
IOM Sampler and cassette, <sup>‡</sup> in conductive plastic, with transport clip and cover	225-70A
IOM Sampler and cassette, <sup>‡</sup> in stainless steel, with transport clip and cover	225-76A
IOM Sampler, <sup>‡</sup> in conductive plastic, with stainless steel cassette, transport clip, and cover	225-79A
<b>Accessories</b>	
Cassette assembly, in conductive plastic, with transport clip and cover	225-71A
Cassette assembly, in stainless steel, with transport clip and cover	225-75A
Transport Clip with cover for cassette	225-72A
IOM Calibration Adapter	391-01
Single Hole Lead Head, for sampling lead to MDHS 6	225-52

## MultiDust Foam Discs, use with filters, select from below

MultiDust Foam Discs for Respirable and Inhalable PM		
	pk/10	225-772
	pk/50	225-772-50

## 25-mm Filters, each sample requires its own filter

PVC, 5.0 µm, pk/100	225-5-25
Glass Fiber, 1.0 µm, pk/500	225-702
MCE, 0.8 µm, pk/100	225-1930
Polycarbonate, 0.8 µm, pk/100	225-1601
Gelatin, pk/50	225-9551

<sup>‡</sup> A 25-mm filter is required for sampling with the IOM; see above.