IOM Personal Sampler

Description
The patented* IOM Sampler is a sampling head that houses a reusable 25-mm filter cassette with specified filter for the collection of inhalable airborne particles. The IOM Sampler meets the following U.S. and international standards:

* ACGIH sampling criteria for inhalable particulate mass
* NIOSH Method 5700 for formaldehyde on dust
* Australian standard for inhalable particulate
* Preferred sampler for HSE Method MDHS 14/3
* Complies with MDHS 25/3 for organic isocyanates
* Complies with MDHS 6 for lead

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

Performance Profile
Flow Rate: 2 L/min (personal sampling)
50% Cut-point: 100 µm at 2 L/min inhalable fraction
Construction: Molded conductive plastic or stainless steel; both are autoclavable
Filters: 25-mm membrane or fibrous filter
Weight (plastic model with cassette): <2 oz (55 gm)
Size: 3.3 x 1.1 in (8.5 x 2.8 cm)
Preparation Guidelines

Handling
Wear gloves when handling cassettes and use tweezers when working with filters to prevent the transfer of moisture, dust, or other contaminants onto the sampling media.

Caution: Wear gloves when handling cassettes and use tweezers when working with filters.

Cleaning Sampler
1. Disassemble the IOM Sampler (Figure 1).
2. Place parts in an ultrasonic cleaner with water and a wetting agent such as soap. IOM components may also be cleaned with a solvent such as isopropyl alcohol. O-rings should be cleaned separately using water only.

Caution: Do not use CFC-based substances to clean the plastic IOM. Do not use solvents on O-rings.

Warning: When using solvents, protect against splashes to the eye, vapor inhalation, and vapor ignition.

3. Clean the components using a clean lint-free paper, cloth, or soft brush. Allow components to dry completely.

Loading a Filter into the IOM Cassette
1. Use gentle pressure to separate the two halves of the cassette (Figure 2).
2. Place a filter into the cassette rear (on the support grid). Snap the cassette front into the cassette rear, ensuring a tight fit.
General Weighing Guidelines

- Plastic cassette with filter should be equilibrated overnight in a balance room under controlled humidity conditions and weighed. Maintain a stable humidity level in the balance room. Stainless steel cassette with filter may be desiccated.
- Pre and post-weigh filter and cassette as a single unit. Before pre and post-weighing, wipe the external surface with a clean lint-free paper, cloth, or soft brush.
- Field blanks can be used to correct weights when using plastic cassettes at low filter loadings. See Sample Blanks on page 6.
- The IOM cassette assembled with filter or the filter alone should be weighed on a five-figure forced balance. Allow the cassette three and a half minutes to stabilize before taking a reading. The same balance should be used for both pre and post-weighing procedures.

Calibration and Sampling

Pre-weighing

1. Equilibrate cassette and filter as indicated in General Weighing Guidelines above.
2. Wipe the external surface of a loaded IOM cassette with a clean lint-free paper, cloth, or soft brush.
3. Pre-weigh the loaded IOM cassette as a single unit (Figure 3).
4. Note the result and reference it with a letter or number to the cassette or the complete IOM Sampler.

Note: The cassette cover (Figure 3) can be included in pre and post-weighing as part of the complete cassette if required, but must be referenced to the cassette used.

Transporting Loaded Cassettes

If not ready to sample immediately or if transporting the pre-weighed loaded cassette to a sampling location, place the cassette with cover into the transport clip. Ensure that the cassette cover is in place. An alternative is to insert the cassette into an IOM body and place the cover on the cassette for transport (Figure 4).
**Calibration Adapter Setup**

1. Push IOM through hinged bracket and place inlet against foam ring.
2. Clamp IOM in place with plastic clamping screw until foam ring compresses by 1 mm. *Ensure IOM inlet is centered.*
3. Screw supplied hose barb into threaded hole in calibration adapter inlet.
4. Use a length of flexible tubing to connect hose barb to calibrator outlet.
5. Connect IOM outlet to the inlet of a sample pump.

**Calibrating Pump Flow Rate**

Calibrate pump flow rate using the IOM Calibration Adapter accessory and a representative IOM sampler in line.

1. Insert IOM with filter cassette and filter into the calibration adapter (*see Calibration Adapter Setup*).
2. Adjust pump flow rate to 2 L/min. *See calibrator and sample pump operating instructions for additional information.*
3. Disconnect representative IOM from pump and calibrator and set aside for flow rate verification after sampling.
Sampling

Caution: Wear gloves when handling cassettes.

1. Remove a newly loaded cassette from its transport clip and remove the cassette cover. Insert the cassette into a clean IOM Sampler body. Screw on the front cover (Figure 5).
2. Clip onto a worker’s clothing in the breathing zone (Figure 6).
3. Ensure that the outlet of the IOM Sampler is connected to the inlet of a sample pump calibrated to 2 L/min (Figure 6).
4. Sample for the time specified in the method.
5. After sampling, remove the cassette from the sampler, place the cover on the cassette, and wipe the external surface of the cassette with a clean lint-free paper, cloth, or soft brush. Place cassette with cover into the transport clip. See Transporting Samples to a Laboratory on page 6 if post-weighing is not to be performed on the premises.

Note: If inhalable samples were collected to determine exposure to formaldehyde on dust using NIOSH Method 5700, place the cassette cover on the cassette and load it into the transport clip. Send cassette in clip, a blank, and all other pertinent sampling information to a laboratory for analysis.

Post-weighing

Caution: Wear gloves when handling cassettes and use tweezers when working with filters.

1. Equilibrate plastic cassette and filter for a reasonable time based on humidity conditions.
2. Remove the cassette from the transport clip before weighing. The cassette cover can remain on if it was used during pre-weighing.
3. Weigh the entire cassette. Compare the pre and post weights. The difference is the amount of inhalable particles collected.

The IOM cassette can be cleaned, reloaded with a fresh filter, and reused. See Cleaning Sampler on page 2.
Transporting Samples to a Laboratory
Place cassette cover on cassette immediately following sampling and insert into a transport clip. Place unit into a sterile plastic bag. Package in a padded envelope and send to a laboratory for analysis. Include pertinent sampling information.

Sample Blanks
Load and handle the blank IOM Sampler in the same manner as the IOM used for sampling. Do not pull air through the blank. Send the blank with the samples to the laboratory.

References

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

The IOM requires a 25-mm filter; see below.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>IOM Sampler and cassette, in conductive plastic, with transport clip and cover</td>
<td>225-70A</td>
</tr>
<tr>
<td>IOM Sampler, in conductive plastic, with stainless steel cassette, transport clip, and cover</td>
<td>225-79A</td>
</tr>
<tr>
<td>IOM Sampler and cassette, in stainless steel, with transport clip and cover</td>
<td>225-76A</td>
</tr>
<tr>
<td>Cassette assembly, in conductive plastic, with transport clip and cover</td>
<td>225-71A</td>
</tr>
<tr>
<td>Cassette assembly, in stainless steel, with transport clip and cover</td>
<td>225-75A</td>
</tr>
<tr>
<td>Transport Clip and Cover</td>
<td>225-72A</td>
</tr>
<tr>
<td>Calibration Adapter</td>
<td>225-73</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>25-mm Filters for IOM, each sample requires its own filter</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC, 5.0 µm, pk/100</td>
<td>225-8-04</td>
</tr>
<tr>
<td>Glass Fiber, 1.0 µm, pk/500</td>
<td>225-702</td>
</tr>
<tr>
<td>MCE, 0.8 µm, pk/100</td>
<td>225-1930</td>
</tr>
<tr>
<td>Polycarbonate, 0.8 µm, pk/100</td>
<td>225-1601</td>
</tr>
<tr>
<td>Gelatin, pk/50</td>
<td>225-9551</td>
</tr>
</tbody>
</table>
Notice: This operating instruction may not address all safety concerns (if any) associated with this product and its use. The user is responsible for determining and following the appropriate safety and health practices and regulatory limitations (if any) before using the product. The information contained in this document should not be construed as legal advice, opinion, or as a final authority on legal or regulatory procedures.