Better Humidification, Better Protection

HMEs, or Heat and Moisture Exchangers, capture heat and water vapor from a patient’s exhaled air. Then during inhalation, they add heat and moisture to the inspired air, providing the appropriate humidification.

Independent published studies have shown Covidien DAR™ filter-HMEs to be among the best HMEs in terms of moisture output. A recently published study by Lellouche et al showed that out of 48 other filters and HMEs tested, three DAR Filter HMEs ranked in the top 10 for performance.1
### ELECTROSTATIC FILTER HMEs

<table>
<thead>
<tr>
<th></th>
<th>Large</th>
<th>Small</th>
<th>Small, Angled Port</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catalog Number</strong></td>
<td>352U5805</td>
<td>352U5877</td>
<td>352U5996</td>
</tr>
<tr>
<td><strong>Quantity/Box</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Recommended Tidal Volume</strong></td>
<td>300-1500 mL</td>
<td>150-1200 mL</td>
<td>150-1200 mL</td>
</tr>
<tr>
<td><strong>Moisture Output</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vt 250 mL</td>
<td>33.9 mg H₂O/L²</td>
<td>34.4 mg H₂O/L³</td>
<td>34.4 mg H₂O/L³</td>
</tr>
<tr>
<td>Vt 500 mL</td>
<td>33.3 mg H₂O/L⁴</td>
<td>33.6 mg H₂O/L⁵</td>
<td>33.6 mg H₂O/L⁴</td>
</tr>
<tr>
<td>Vt 1000 mL</td>
<td>32.4 mg H₂O/L⁵</td>
<td>32.9 mg H₂O/L⁵</td>
<td>32.9 mg H₂O/L⁵</td>
</tr>
<tr>
<td><strong>Moisture Loss</strong></td>
<td>6 mg H₂O/L at Vt 500 mL</td>
<td>6 mg H₂O/L at Vt 500 mL</td>
<td>6 mg H₂O/L at Vt 500 mL</td>
</tr>
</tbody>
</table>

**Resistance to Flow at (ISO 9360)**

<table>
<thead>
<tr>
<th>Rate (L/min)</th>
<th>Large</th>
<th>Small</th>
<th>Small, Angled Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>0.9 cm H₂O</td>
<td>1.0 cm H₂O</td>
<td>1.2 cm H₂O</td>
</tr>
<tr>
<td>60</td>
<td>2.1 cm H₂O</td>
<td>2.8 cm H₂O</td>
<td>2.9 cm H₂O</td>
</tr>
<tr>
<td>90</td>
<td>3.6 cm H₂O</td>
<td>4.7 cm H₂O</td>
<td>5.2 cm H₂O</td>
</tr>
</tbody>
</table>

**Filtration Efficiency**

- **Bacterial**
  - Large: >99.999%
  - Small: >99.99%
  - Small, Angled Port: >99.99%
- **Viral**
  - Large: >99.999%
  - Small: >99.99%
  - Small, Angled Port: >99.99%
- **NaCl⁹**
  - Large: >99.623%
  - Small: >97.416%
  - Small, Angled Port: >97.416%

**Internal Volume**
- Large: 90 mL
- Small: 51 mL
- Small, Angled Port: 61 mL

**Weight (approx.)**
- Large: 50 g
- Small: 28 g
- Small, Angled Port: 29 g

**Type of Filtration**
- Large: Electrostatic
- Small: Electrostatic
- Small, Angled Port: Electrostatic

### MECHANICAL FILTER HMEs

<table>
<thead>
<tr>
<th></th>
<th>Large</th>
<th>Small</th>
<th>Pediatric</th>
<th>Infant-Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catalog Number</strong></td>
<td>354U5876</td>
<td>354U19028</td>
<td>355U5430</td>
<td>355U5427</td>
</tr>
<tr>
<td><strong>Quantity/Box</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Recommended Tidal Volume</strong></td>
<td>300-1500 mL</td>
<td>200-1500 mL</td>
<td>75-300 mL</td>
<td>30-100 mL</td>
</tr>
<tr>
<td><strong>Moisture Output</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vt 50 mL</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>30 mg H₂O/L²</td>
</tr>
<tr>
<td>Vt 250 mL</td>
<td>34.7 mg H₂O/L⁴</td>
<td>33.0 mg H₂O/L⁵</td>
<td>32.3 mg H₂O/L⁴</td>
<td>---</td>
</tr>
<tr>
<td>Vt 500 mL</td>
<td>34.1 mg H₂O/L⁴</td>
<td>31.5 mg H₂O/L⁵</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Vt 1000 mL</td>
<td>33.4 mg H₂O/L⁵</td>
<td>29.6 mg H₂O/L⁶</td>
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<td>---</td>
</tr>
<tr>
<td><strong>Moisture Loss</strong></td>
<td>6 mg H₂O/L at Vt 500 mL</td>
<td>6 mg H₂O/L at Vt 500 mL</td>
<td>6 mg H₂O/L at Vt 500 mL</td>
<td>NA</td>
</tr>
</tbody>
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**Resistance to Flow at (ISO 9360)**

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<th>Small</th>
<th>Pediatric</th>
<th>Infant-Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.6 cm H₂O</td>
</tr>
<tr>
<td>20</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>1.6 cm H₂O</td>
</tr>
<tr>
<td>30</td>
<td>0.8 cm H₂O</td>
<td>1.2 cm H₂O</td>
<td>2.6 cm H₂O</td>
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**Filtration Efficiency**

- **Bacterial**
  - Large: >99.999999%
  - Small: >99.999%
  - Pediatric: >99.999%
  - Infant-Pediatric: >99.999%
- **Viral**
  - Large: >99.999%
  - Small: >99.999%
  - Pediatric: >99.99%
  - Infant-Pediatric: >99.99%
- **NaCl⁹**
  - Large: >99.764%
  - Small: >99.992%
  - Infant-Pediatric: >96.263%
  - Pediatric: >94.186%

**Internal Volume**
- Large: 96 mL
- Small: 66 mL
- Pediatric: 31 mL
- Infant-Pediatric: 10 mL

**Weight (approx.)**
- Large: 49 g
- Pediatric: 36 g
- Infant-Pediatric: 21 g
- Small: 9 g

**Type of Filtration**
- Large: Mechanical
- Small: Mechanical
- Pediatric: Electrostatic
- Infant-Pediatric: Electrostatic

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*Internal testing Mirandola (various 2005-2008).

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**REFERENCES**


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*DAR Filter/HMEs have been tested against microbes as small as 0.02 µ.*

**CONFLICT OF INTEREST:** Authors do not report any conflict of interest.

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**Internal testing Mirandola (various 2005-2008).**

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**REFERENCES**