1-1-2015

Kamiah’s Kool Vests: Preventing Heat Stress in Service Dogs

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**Introduction**

- Service dogs are required to perform tasks for persons with disabilities.
- Service dogs are working animals, not pets.
- The health and safety of service dogs can impact the safety of the owner.
- Service dogs may be overexposed to heat in hot outdoor environments.
- To protect service dogs from excessive heat from the sun, a special IR blocking vest was developed and tested.

**Background**

- Signs of heat stroke in dogs:
  - Body temperature 104-110°F
  - Excessive panting
  - Dark or bright red gums
  - Sticky and dry tongue
  - Rapid heart beat
  - Staggering
  - Stupor or seizures
  - Bloody diarrhea
  - Vomiting
  - Unusual behavior

**Test Method**

- Vest was placed into Infrared (IR) testing equipment as illustrated in Fig. 1.
- Vest was exposed to 0, 100, 150, and 200 Watts IR power levels for a duration of 60 sec.
- Measurements were obtained three times and values averaged.
- Measurements were repeated without use of Vest to determine a reference condition (Control).

**Equipment**

- Thermocouple thermometer was used to record IR heat effects.

**Results**

<table>
<thead>
<tr>
<th>IR Power Input (Watts)</th>
<th>Test 1 Temp (ºC)</th>
<th>Test 2 Temp (ºC)</th>
<th>Test 3 Temp (ºC)</th>
<th>Average Temp (ºC)</th>
<th>Cumulative Temperature Increase (ºC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20.4</td>
<td>22.3</td>
<td>23.3</td>
<td>22.0</td>
<td>8</td>
</tr>
<tr>
<td>100</td>
<td>25.6</td>
<td>26.3</td>
<td>27.3</td>
<td>26.4</td>
<td>14</td>
</tr>
<tr>
<td>150</td>
<td>27.9</td>
<td>28.7</td>
<td>29.6</td>
<td>28.7</td>
<td>18</td>
</tr>
<tr>
<td>200</td>
<td>31.8</td>
<td>33.0</td>
<td>32.0</td>
<td>32.2</td>
<td>22</td>
</tr>
</tbody>
</table>

**Conclusions**

- Test results show a 64% reduction in IR penetration through the shield.
- Use of this device can help reduce heat stress experienced by service dogs.