C-RAM MILLIMETER WAVE

APLLICATION NOTE 300-13

HIGH FREQUENCY RADAR ABSORBER

Cuming Microwave offers various materials that provide excellent absorption at frequencies from 18 GHz to 110 GHz. The C-RAM MMW absorbers include plastic foam sheet and elastomeric-based materials that have been characterized for peak performance across a wide range of frequencies. C-RAM MMW has proven to be ideal for side lobe suppression of communication antennas, used to separate adjacent antennas, shield or isolate equipment and Anechoic chamber applications.

The reflectivity of C-RAM MMW varies as a function of thickness and frequency. Standard sheet size is 24”x24” for foam and 12”x12” for elastomer in thicknesses shown in the chart below. Non-standard thickness and sizes are available on special order.

TYPICAL PERFORMANCE OF C-RAM MMW-1, LIGHTWEIGHT FOAM

CARBON TREATED, OPEN CELL FOAM

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Frequency</th>
<th>Reflectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50&quot;</td>
<td>26 to 110 GHz</td>
<td>&gt;20dB</td>
</tr>
<tr>
<td>0.25&quot;</td>
<td>70 to 110 GHz</td>
<td>&gt;20dB</td>
</tr>
</tbody>
</table>

TYPICAL PHYSICAL PROPERTIES:

Color: Black
Density: 3.2kg/m² (0.65lb/ft²)
Temperature Range, °F: -60 to 80°F
(Standard Formula Flammable) note.

TYPICAL PERFORMANCE OF C-RAM MMW-2, LIGHTWEIGHT FOAM

LOSSY, CARBON FILLED, FLEXIBLE FOAM

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Frequency</th>
<th>Reflectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.125&quot;</td>
<td>70 – 110 GHz</td>
<td>&gt;17 dB</td>
</tr>
<tr>
<td>0.250&quot;</td>
<td>40 – 110 GHz</td>
<td>&gt;20 dB</td>
</tr>
<tr>
<td>0.50&quot;</td>
<td>26 – 110 GHz</td>
<td>&gt;20 dB</td>
</tr>
</tbody>
</table>

TYPICAL PHYSICAL PROPERTIES:

Color: Black
Density (dependent upon grade): 0.06 to 0.13g/cm³ (4 to 8 lb/ft³)
Service Temperature, °F: -60°F to 180°F
TYPICAL PERFORMANCE OF C-RAM MMW-3, ELASTOMERIC

ELECTRICAL PERFORMANCE:

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Weight</th>
<th>Frequency</th>
<th>Reflectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.025&quot;</td>
<td>.5 lb/ft²</td>
<td>26 to 40 GHz</td>
<td>-20dB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 to 110 GHz</td>
<td>&gt;-15dB</td>
</tr>
</tbody>
</table>

TYPICAL PHYSICAL PROPERTIES:

Color: Grey
Service Temperature, °F: -80 to 275°F (-62 to 134°C)
Flammability: Non-Flammability

TYPICAL REFLECTIVITY:

TYPICAL PERFORMANCE C-RAM MMW-1
OPEN CELL FOAM, 0.25” (T)

TYPICAL PERFORMANCE C-RAM MMW-2
FLEXIBLE FOAM, 0.25” (T)

TYPICAL PERFORMANCE C-RAM MMW-3
TUNED ELASTOMERIC ABSORBER
(SPECIFIED FREQUENCY)

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