## Device Material Content

**Package:** 49 uBGA  
**Package Code:** CM49  
**Assembly:** ASEM  
**Size (mm):** 3 x 3  
**Lead pitch (mm):** 0.4  
**MSL:** 3  
**Reflow max (°C):** 260

### Total Device Weight

<table>
<thead>
<tr>
<th>Package</th>
<th>Weight (g)</th>
<th>% of Total Pkg. Wt.</th>
<th>Substance</th>
<th>CAS #</th>
<th>Notes / Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Die</strong></td>
<td>0.00129</td>
<td>8.59%</td>
<td>Silicon chip</td>
<td>7440-21-3</td>
<td>Die size: 1.5 x 1.5mm</td>
</tr>
<tr>
<td><strong>Mold Compound</strong></td>
<td>0.00836</td>
<td>55.74%</td>
<td>Silica</td>
<td>60676-86-0</td>
<td>Mold Compound: Kyocera KE-G1250LKDS</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Epoxy resin</td>
<td>-</td>
<td>6.50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Phenol Resin</td>
<td>-</td>
<td>5.50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Carbon Black</td>
<td>1333-86-4</td>
<td>0.50%</td>
</tr>
<tr>
<td><strong>D/A Tape</strong></td>
<td>0.00006</td>
<td>0.42%</td>
<td>Silver</td>
<td>7440-22-4</td>
<td>Hitachi FH-900 HR-9004 series</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Esters &amp; resins</td>
<td>-</td>
<td>20.00%</td>
</tr>
<tr>
<td><strong>Wire</strong></td>
<td>0.00008</td>
<td>0.54%</td>
<td>Copper</td>
<td>7440-50-8</td>
<td>0.7 MIL Pd coated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Palladium</td>
<td>7440-65-3</td>
<td>1.50%</td>
</tr>
<tr>
<td><strong>Solder Balls</strong></td>
<td>0.00042</td>
<td>2.79%</td>
<td>Tin (Sn)</td>
<td>7440-31-5</td>
<td>SAC105</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Silver (Ag)</td>
<td>7440-22-4</td>
<td>1.00%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Copper (Cu)</td>
<td>7440-50-8</td>
<td>0.50%</td>
</tr>
<tr>
<td><strong>Substrate</strong></td>
<td>0.0023</td>
<td>15.23%</td>
<td>BT Resins</td>
<td>-</td>
<td>BT Resin CCL-4HL832NX-A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Glass fiber</td>
<td>65997-17-3</td>
<td>68.00%</td>
</tr>
<tr>
<td><strong>Foil</strong></td>
<td>0.0018</td>
<td>12.12%</td>
<td>Copper</td>
<td>7440-50-8</td>
<td>79.78%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nickel</td>
<td>7440-02-0</td>
<td>18.58%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gold</td>
<td>7440-57-5</td>
<td>1.64%</td>
</tr>
<tr>
<td><strong>soldier Mask</strong></td>
<td>0.0007</td>
<td>4.57%</td>
<td>Quartz</td>
<td>14808-60-7</td>
<td>Soldier mask PSR4000 AUS 308</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3-methoxy-3-methylbutylacetate</td>
<td>103429-90-9</td>
<td>16.00%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Barium Sulfate</td>
<td>7727-43-7</td>
<td>22.00%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Talc (containing no asbestiform fibers)</td>
<td>14807-96-6</td>
<td>3.00%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Trade secret ingredients</td>
<td>-</td>
<td>2.80%</td>
</tr>
</tbody>
</table>

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# Device Material Content

## Package Information
- **Assembly:** ASEK
- **Size (mm):** 3 x 3
- **Lead pitch (mm):** 0.4
- **MSL:** 3
- **Reflow max (ºC):** 260

## Package Code: CM49

### ICE40LM

<table>
<thead>
<tr>
<th>Total Device Weight</th>
<th>26.19 Milligrams</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Package:</strong> 49 uBGA</td>
<td></td>
</tr>
<tr>
<td><strong>Product:</strong></td>
<td></td>
</tr>
</tbody>
</table>

## Die Information
- **% of Total Pkg. Wt.:** 2.56%
- **Weight (mg):** 0.670
- **% of Total Pkg. Wt.:** 2.56%
- **Weight (mg):** 0.670
- **Substance:** Silicon chip
- **CAS #:** 7440-21-3
- **% of Subst.:** 100.00%

## Mold Compound Information
- **% of Total Pkg. Wt.:** 66.64%
- **Weight (mg):** 17.453
- **% of Total Pkg. Wt.:** 58.31%
- **Weight (mg):** 15.271
- **Substance:** Silica
- **CAS #:** 60676-86-0
- **% of Subst.:** 87.50%

## D/A Epoxy Information
- **% of Total Pkg. Wt.:** 0.95%
- **Weight (mg):** 0.249
- **% of Total Pkg. Wt.:** 0.49%
- **Weight (mg):** 0.130
- **Substance:** SiO2 Filler
- **CAS #:** 99439-28-8
- **% of Subst.:** 52.00%

## Wire Information
- **% of Total Pkg. Wt.:** 1.79%
- **Weight (mg):** 0.469
- **% of Total Pkg. Wt.:** 1.73%
- **Weight (mg):** 0.453
- **Substance:** Copper
- **CAS #:** 7440-50-8
- **% of Subst.:** 96.60%

## Solder Balls Information
- **% of Total Pkg. Wt.:** 8.97%
- **Weight (mg):** 2.349
- **% of Total Pkg. Wt.:** 8.83%
- **Weight (mg):** 2.314
- **Substance:** Tin (Sn)
- **CAS #:** 7440-31-5
- **% of Subst.:** 98.50%

## Substrate Information
- **% of Total Pkg. Wt.:** 6.24%
- **Weight (mg):** 1.634
- **% of Total Pkg. Wt.:** 2.00%
- **Weight (mg):** 0.523
- **Substance:** BT Resin
- **CAS #:** 65997-17-3
- **% of Subst.:** 32.00%

## Foil Information
- **% of Total Pkg. Wt.:** 11.46%
- **Weight (mg):** 3.000
- **% of Total Pkg. Wt.:** 11.46%
- **Weight (mg):** 3.000
- **Substance:** Copper
- **CAS #:** 7440-50-8
- **% of Subst.:** 100.00%

## solderMask Information
- **% of Total Pkg. Wt.:** 1.40%
- **Weight (mg):** 0.367
- **% of Total Pkg. Wt.:** 0.79%
- **Weight (mg):** 0.206
- **Substance:** Quartz
- **CAS #:** 14808-60-7
- **% of Subst.:** 56.20%

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