## Device Material Content

<table>
<thead>
<tr>
<th>package</th>
<th>Total Device Weight</th>
<th>Package Code:</th>
<th>MSL</th>
<th>Lead pitch (mm):</th>
<th>Rework max (ºC):</th>
</tr>
</thead>
<tbody>
<tr>
<td>256 caBGA</td>
<td>327.63 Milligrams</td>
<td>BG256</td>
<td>3</td>
<td>0.8</td>
<td>260</td>
</tr>
</tbody>
</table>

### Die

- **Weight (mg):** 15.50
- **% of Total Pkg. Wt.:** 4.73%
- **Substance:** Silicon chip
- **CAS #:** 7440-21-3
- **% of Subst.:** 100.00%
- **Notes / Assumptions:** Die size: 3.95 x 5.55 mm

### Mold Compound

- **Weight (mg):** 104.87
- **% of Total Pkg. Wt.:** 32.01%
- **Substances:**
  - Aluminum oxide (24.01%): 78.656
  - Silica/Fused (4.00%): 13.109
  - Epoxy resin (1.92%): 6.292
  - Phenol resin (1.92%): 6.292
  - Carbon Black (0.16%): 0.524
- **CAS #:**
  - Aluminum oxide: 1344-28-1
  - Silica/Fused: 60676-86-0
  - Epoxy resin: -
  - Phenol resin: -
  - Carbon Black: 1333-86-4
- **% of Subst.:**
  - Aluminum oxide: 75.00%
  - Silica/Fused: 12.50%
  - Epoxy resin: 6.00%
  - Phenol resin: 6.00%
  - Carbon Black: 0.50%
- **Notes / Assumptions:** Mold Compound: Kyocera KE-G1250AHT

### D/A Epoxy

- **Weight (mg):** 5.57
- **% of Total Pkg. Wt.:** 1.70%
- **Substances:**
  - Silver (1.36%): 4.456
  - Esters & resins (0.34%): 1.114
- **CAS #:**
  - Silver: 7440-22-4
  - Esters & resins: -
- **% of Subst.:**
  - Silver: 80.00%
  - Esters & resins: 20.00%
- **Notes / Assumptions:** Die attach epoxy: Henkel (Ablebond) 2100A

### Wire

- **Weight (mg):** 1.87
- **% of Total Pkg. Wt.:** 0.57%
- **Substances:**
  - Copper (Cu) (0.55%): 1.803
  - Palladium (Pd) (0.02%): 0.058
  - Gold (Au) (0.00%): 0.007
- **CAS #:**
  - Copper (Cu): 7440-50-8
  - Palladium (Pd): 7440-05-3
  - Gold (Au): 7440-57-5
- **% of Subst.:**
  - Copper (Cu): 96.55%
  - Palladium (Pd): 3.10%
  - Gold (Au): 0.35%
- **Notes / Assumptions:** Au coated PCC, 0.02mm dia

### Solder Balls

- **Weight (mg):** 71.55
- **% of Total Pkg. Wt.:** 21.84%
- **Substances:**
  - Tin (Sn) (21.08%): 69.050
  - Silver (Ag) (0.66%): 2.147
  - Copper (Cu) (0.11%): 0.358
- **CAS #:**
  - Tin (Sn): 7440-31-5
  - Silver (Ag): 7440-22-4
  - Copper (Cu): 7440-50-8
- **% of Subst.:**
  - Tin (Sn): 96.50%
  - Silver (Ag): 3.00%
  - Copper (Cu): 0.50%
- **Notes / Assumptions:** SAC-305

### Substrate

- **Weight (mg):** 44.90
- **% of Total Pkg. Wt.:** 13.70%
- **Substances:**
  - BT Resins (4.38%): 14.366
  - Glass fiber (9.32%): 30.529
- **CAS #:**
  - BT Resins: 65997-17-3
- **% of Subst.:**
  - BT Resins: 32.00%
  - Glass fiber: 68.00%
- **Notes / Assumptions:** BT Resin CCL-HL832NX-A

### Solder mask

- **Weight (mg):** 21.82
- **% of Total Pkg. Wt.:** 6.66%
- **Substances:**
  - Solvent naphtha (petroleum) (1.57%): 5.131
  - Naphthalene (0.39%): 1.282
  - Phosphinoxide derivative (0.98%): 3.208
  - Talc (containing no asbestiform fibers) (0.98%): 3.208
  - Dipropylene glycol monomethyl Ether (1.17%): 3.847
  - Epoxy Resin (0.98%): 3.208
  - Barium Sulfate (0.59%): 1.938
- **CAS #:**
  - Solvent naphtha (petroleum): 64742-94-5
  - Naphthalene: 91-20-3
  - Phosphinoxide derivative: -
  - Talc (containing no asbestiform fibers): 14807-96-6
  - Dipropylene glycol monomethyl Ether: 34580-84-8
  - Epoxy Resin: 85954-11-6
  - Barium Sulfate: 7727-43-7
- **% of Subst.:**
  - Solvent naphtha (petroleum): 23.52%
  - Naphthalene: 5.87%
  - Phosphinoxide derivative: 14.70%
  - Talc (containing no asbestiform fibers): 14.70%
  - Dipropylene glycol monomethyl Ether: 17.63%
  - Epoxy Resin: 14.70%
  - Barium Sulfate: 8.88%
- **Notes / Assumptions:** Solder mask PSR4000 AUS 320

### Foil

- **Weight (mg):** 61.56
- **% of Total Pkg. Wt.:** 18.79%
- **Substances:**
  - Copper (17.51%): 57.356
  - Nickel plating (1.06%): 3.460
  - Gold plating (0.23%): 0.748
- **CAS #:**
  - Copper: 7440-50-8
  - Nickel plating: 7440-02-0
  - Gold plating: 7440-57-5
- **% of Subst.:**
  - Copper: 93.17%
  - Nickel plating: 5.62%
  - Gold plating: 1.21%

The values listed above are nominal values based on studies of representatives of this particular package type, and are believed to be as accurate as possible.

Constituent substances and proportions in epoxy materials are before curing.

The information provided above is representative of the package as of the date listed, and is subject to change at any time.

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## Device Material Content

<table>
<thead>
<tr>
<th>Package Type:</th>
<th>256 caBGA</th>
<th>Package Code: BF236</th>
<th>Assembly: ATK</th>
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<td>Product Type:</td>
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<td>Size (mm): 14 x 14</td>
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<td>Lead (mm): 0.8</td>
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<td>MSL: 3</td>
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<td>Reflow max (°C): 260</td>
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### November, 2020

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<th>Product Type</th>
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<th>Weight (g)</th>
<th>% of Total Pkg. Wt.</th>
<th>Weight (g)</th>
<th>Substance</th>
<th>CAS #</th>
<th>% of Subst.</th>
<th>Notes / Assumptions</th>
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<tbody>
<tr>
<td><strong>Die</strong></td>
<td>4.09%</td>
<td>0.0213</td>
<td>4.09%</td>
<td>0.0213</td>
<td>Silicon chip</td>
<td>7440-21-5</td>
<td>100.00%</td>
<td>Die size: 5.23 x 6.26 x 0.279 mm</td>
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<td><strong>Mold Compound</strong></td>
<td>49.24%</td>
<td>0.2560</td>
<td>1.48%</td>
<td>0.00768</td>
<td>Epoxy Resin A</td>
<td>-</td>
<td>3.00%</td>
<td>Mold Compound: Sumitomo EME G770SF</td>
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<td>1.48%</td>
<td>0.00768</td>
<td>Epoxy Resin B</td>
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<td>1.48%</td>
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<td>Phenol Resin</td>
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<td>35.70%</td>
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<tr>
<td><strong>D/A Epoxy</strong></td>
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<td>0.00305</td>
<td>Silver</td>
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<td>0.07%</td>
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<td><strong>Wire</strong></td>
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<td>0.35%</td>
<td>0.00182</td>
<td>Copper (Cu)</td>
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<td>97.05%</td>
<td>Au coated PCC, 0.02mm dia</td>
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<td>0.01%</td>
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<td>Palladium (Pd)</td>
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<td>0.00%</td>
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<td>Gold (Au)</td>
<td>7440-57-5</td>
<td>0.13%</td>
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<tr>
<td><strong>Solder Balls</strong></td>
<td>17.39%</td>
<td>0.0904</td>
<td>16.78%</td>
<td>0.0873</td>
<td>Tin (Sn)</td>
<td>7440-31-5</td>
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<td>SAC305</td>
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<td>0.52%</td>
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<td>Copper (Cu)</td>
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<tr>
<td><strong>Substrate</strong></td>
<td>15.07%</td>
<td>0.0784</td>
<td>4.14%</td>
<td>0.0216</td>
<td>BT Resins</td>
<td>-</td>
<td>27.50%</td>
<td>BT Resin CCL-HL832NX-A</td>
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<td>Glass fiber</td>
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<td><strong>Solder mask</strong></td>
<td>2.09%</td>
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<td>0.00256</td>
<td>Solvent naphtha (petroleum)</td>
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<td>Solder mask PSR4000 AUS 320</td>
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<td>0.12%</td>
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<td>0.31%</td>
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<td>Talc (containing no asbestos fibers)</td>
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<td>Barium Sulfate</td>
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<tr>
<td><strong>Foil</strong></td>
<td>11.08%</td>
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<td>1.28%</td>
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<td>Gold plating</td>
<td>7440-57-5</td>
<td>1.21%</td>
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</tbody>
</table>

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