



## Device Material Content

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**Package: 132 csBGA with SnAgCu Solder Balls**  
**Total Device Weight 0.124 Grams**

**Halogen Free**  
MSL: 3  
Peak Reflow Temp: 260°C

November, 2010

|                     | % of Total Pkg. Wt. | Weight (g) | % of Total Pkg. Wt. | Weight (g) | Substance                                | CAS #      | Notes / Assumptions:   |
|---------------------|---------------------|------------|---------------------|------------|--|------------|--|
| <b>Die</b>          | 6.93%               | 0.009      |                     |            | Silicon chip                             | 7440-21-3  | Die size: 4.71 x 2.90 mm   |
| <b>Mold</b>         | 55.08%              | 0.068      | 46.81%              | 0.058      | Silica                                   | 60676-86-0 | Mold Compound composition:<br>75 to 95% Fused silica filler (LSC uses 83% in our calculation)<br>2 to 10% Epoxy resin (LSC uses 7.5% in our calculation)<br>2 to 10% Phenol resin (LSC uses 7.5% in our calculation)<br>0.5 to 2.5% Metal hydroxide (LSC uses 1.5% in our calculation)<br>0.1 to 0.5% Carbon Black (LSC uses 0.5% in our calculation)<br>Mold Compound Density ranges between 1.8 and 2.1 grams/cc |
|                     |                     |            | 3.30%               | 0.004      | Epoxy Resin                              | -          |  |
|                     |                     |            | 3.30%               | 0.004      | Phenol Resin                             | -          |  |
|                     |                     |            | 0.83%               | 0.001      | Metal Hydroxide                          | -          |  |
|                     |                     |            | 0.11%               | 0.0001     | Carbon Black                             | 1333-86-4  |  |
| <b>D/A Epoxy</b>    | 1.12%               | 0.0014     | 0.90%               | 0.0011     | Silver filled epoxy                      | 7440-22-4  | Die attach epoxy Density: 4 grams/cc<br>60 to 100% Silver (LSC uses 80% in our calculation)<br>0 to 40% Organic Esters and Resins (LSC uses 20% in our calculation)  |
|                     |                     |            | 0.22%               | 0.0003     | Silver (Ag)<br>Organic esters and resins | -          |  |
| <b>Wire</b>         | 3.12%               | 0.004      |                     |            | Gold (Au)                                | 7440-57-5  | 0.8 to 1.0 mil diameter; 1 wire per solder ball; wire length 3 mm  |
| <b>Solder Balls</b> | 11.20%              | 0.014      | 10.70%              | 0.0133     | Tin (Sn)                                 | 7440-31-5  | Solder ball composition Sn95.5/Ag4/Cu0.5   |
|                     |                     |            | 0.45%               | 0.0006     | Silver (Ag)                              | 7440-22-4  |  |
|                     |                     |            | 0.06%               | 0.0001     | Copper (Cu)                              | 7440-50-8  |  |
| <b>Substrate</b>    | 13.71%              | 0.017      | 9.32%               | 0.0116     | Glass fiber                              | 65997-17-3 | 60 to 75% glass fiber (LSC uses 68% in our calculation)  |
|                     |                     |            | 4.39%               | 0.0054     | BT Resins                                | -          |  |
| <b>Foil</b>         | 8.84%               | 0.011      |                     |            | Copper (Cu)                              | 7440-50-8  |  |

**Notes:**

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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