



## Device Material Content

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**Package: 328 csBGA with SnAgCu Solder Balls**  
**Total Device Weight 0.31 Grams**

**Copper Bond Wire version**  
**Halogen Free**  
MSL: 3 Peak Reflow Temp: 260°C

| December, 2012      | % of Total Pkg. Wt. | Weight (g) | % of Total Pkg. Wt. | Weight (g) | Substance               | CAS #      | Notes / Assumptions:   |
|---------------------|---------------------|------------|---------------------|------------|-------------------------|------------|--|
| <b>Die</b>          | 4.49%               | 0.0139     |                     |            | Silicon chip            | 7440-21-3  | Die size: 4.60 x 5.20 mm   |
| <b>Mold</b>         | 50.20%              | 0.1556     | 45.18%              | 0.1400     | Silica                  | 60676-86-0 | Mold Compound composition:<br>86 to 93% Silica Fused or Amorphous (LSC uses 90% in our calculation)<br>1.5 to 7% Epoxy resin (LSC uses 6% in our calculation)<br>1 to 6% Phenol resin (LSC uses 4% in our calculation)<br>0.2% Carbon Black<br>Mold Compound Density ranges between 1.99 and 2.09 grams/cc |
|                     |                     |            | 3.01%               | 0.0093     | Epoxy Resin             | -          |  |
|                     |                     |            | 2.01%               | 0.0062     | Phenol Resin            | -          |  |
|                     |                     |            | 0.10%               | 0.0003     | Carbon Black            | 1333-86-4  |  |
| <b>D/A Epoxy</b>    | 0.69%               | 0.0021     | 0.55%               | 0.0017     | Silver (Ag)             | 7440-22-4  | Die attach epoxy Density: 4 grams/cc<br>70 to 90% Silver (LSC uses 80% in our calculation)<br>10 to 30% Organic Esters and Resins (LSC uses 20% in our calculation)  |
|                     |                     |            | 0.14%               | 0.0004     | Organic esters & resins | -          |  |
| <b>Wire</b>         | 0.77%               | 0.0024     | 0.76%               | 0.00237    | Copper                  | 7440-50-8  | Pd coated Copper, 0.8 mil diameter<br>98.5%  |
|                     |                     |            | 0.01%               | 0.00004    | Palladium               | 7440-05-3  |  |
| <b>Solder Balls</b> | 11.11%              | 0.0344     | 10.67%              | 0.0331     | Tin (Sn)                | 7440-31-5  | Solder ball composition Sn96.5/Ag3/Cu0.5 (SAC305)  |
|                     |                     |            | 0.39%               | 0.0012     | Silver (Ag)             | 7440-22-4  |  |
|                     |                     |            | 0.06%               | 0.00017    | Copper (Cu)             | 7440-50-8  |  |
| <b>Substrate</b>    | 20.48%              | 0.0635     | 13.92%              | 0.0432     | Glass fiber             | 65997-17-3 | 60 to 75% glass fiber (LSC uses 68% in our calculation)  |
|                     |                     |            | 6.55%               | 0.0203     | BT Resins               | -          |  |
| <b>Foil</b>         | 12.26%              | 0.0380     |                     |            | 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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