Device Material Content

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Package: **484 fpBGA** **with SnAgCu Solder Balls**
Total Device Weight **2.21** **Grams**

Halogen Free (90nm and 65nm products)
MSL: 3
Peak Reflow Temp: 250°C

November, 2010	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	Notes / Assumptions:
Die	3.58%	0.0790			Silicon chip	7440-21-3	Die size: 9.63 x 11.36 mm
Mold	25.07%	0.554					Mold Compound composition:
			22.56%	0.499	Silica (Fused or Amorphous)	60676-86-0	85 to 95% Silica Fused or Amorphous (LSC uses 90% in our calculation)
			0.75%	0.0166	Epoxy resin	-	0.5 to 5% Epoxy resin (LSC uses 3% in our calculation)
			1.20%	0.0266	Phenol resin	-	3 to 6% Phenol resin (LSC uses 4.8% in our calculation)
			0.05%	0.0011	Carbon black	1333-86-4	approx. 0.2% Carbon black
			0.50%	0.0111	Other	-	approx. 2% Other
D/A Epoxy	0.50%	0.0111					Die attach epoxy Density: 4 grams/cc
			0.40%	0.0089	Silver (Ag)	7440-22-4	70 to 90% Silver (LSC uses 80% in our calculation)
			0.10%	0.0022	Organic esters and resins	-	10 to 30% Organic Esters and Resins (LSC uses 20% in our calculation)
Wire	0.64%	0.0142			Gold (Au)	7440-57-5	0.8 to 1.0 mil diameter; 1 wire per solder ball
Solder Balls	21.30%	0.471					
			20.45%	0.452	Tin (Sn)	7440-31-5	Solder ball composition Sn96.5/Ag3/Cu0.5 (SAC305)
			0.75%	0.0165	Silver (Ag)	7440-22-4	
			0.11%	0.0024	Copper (Cu)	7440-50-8	
Substrate	19.19%	0.424					
			13.05%	0.288	Glass fiber	65997-17-3	60 to 75% glass fiber (LSC uses 68% in our calculation)
			6.14%	0.136	BT Resins	-	
Foil	29.72%	0.657			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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Rev. A