



ASE ADVANCED SEMICONDUCTOR ENGINEERING, INC.

Package Material Composition and Mass Calculation

Customer: : GSI
 Package: : 14x22 209L LBGA
 Device Type: : GS8642x72GC
 Die Size / Thickness: : 378X647 mils / 8mil
 Total Pck. Weight (g): 0.89321

Provided by : Peter JL
 Date: 2010/5/12

	name	composition	CAS No.	%	mg.(ave)	mg.	%	PPM
Mold Compound	CEL-9750ZHF10AK-U					<u>372.57</u>	<u>41.71</u>	<u>417,114</u>
		Silica	60676-86-0	88-95%	341.09		38.19	381,867
		Epoxy resin1	Trade Secret	2-4%	11.18		1.25	12,513
		Epoxy resin2	Trade Secret	0.5-2%	4.66		0.52	5,214
		Phenolic resin	Trade Secret-2	1-3%	7.45		0.83	8,342
		Carbon black	1333-86-4	approx 0.2%	0.75		0.08	834
		Others	Trade Secret	approx 2%	7.45		0.83	8,342
Substrate	BT-substrate					<u>255.73</u>	<u>28.63</u>	<u>286,304</u>
		SiO2	60676-86-0	10-12	28.13		3.15	31,493
		Acrylic	Trade Secret	9-11	25.57		2.86	28,630
AUS303+		Epoxy	29690-82-2, 68541-56-0, 25068-38-6	6-10	20.46		2.29	22,904
CCL-HL832+		Bisphenol	13676-54-5	10-20	38.36		4.29	42,946
GHPL830HS		Triazol	25722-66-1	15-20	44.75		5.01	50,103
		Cu	7440-50-8	30-40	93.07		10.42	104,201
		Ni	7440-02-0	1-2	3.84		0.43	4,295
		Au	7440-57-5	0.2-0.9	1.41		0.16	1,575
		Br	Trade Secret	0.01-0.1	0.14		0.02	157
Die	Silicon	Silicon	7440-21-3		75.72	<u>75.72</u>	<u>8.48</u>	<u>84,773</u>
Die Attach	FH-900T-25					<u>10.10</u>	<u>1.13</u>	<u>11,308</u>
		Novolak Epoxy Resin	Trade Secret	10-20	1.01		0.11	1,131
		Phenol Resin	Trade Secret	10-20	1.01		0.11	1,131
		Amorphous Silica	68611-44-9	0-10	0.51		0.06	565
		Acrylic Copolymer	Trade Secret	70-80	7.58		0.85	8,481
Wire	25um					<u>4.68</u>	<u>0.52</u>	<u>5,240</u>
		Au	7429-90-5	99.99	4.680		0.52	5,239
		Ion Impurities	Trade Secret	0.01	0.0005		0.00	1
External Plating	Solder Ball (95.5Sn/4.0Ag/0.5Cu_0.6mm)					<u>174.41</u>	<u>19.53</u>	<u>195,262</u>
		Tin (Sn)	7440-31-5	95.5	166.56		18.65	186,475
		Silver (Ag)	7440-22-4	4.0	6.98		0.78	7,810
		Cu	7440-50-8	0.5	0.87		0.10	976
Total						893.21	100	1000000

DISCLAIMER

1. The above material declaration can be used only as reference in identifying the hazardous material content of the product.
2. The PPM value and each material weight is "an average calculated value" only based on the data and/or data range provided by material suppliers.