



ASE ADVANCED SEMICONDUCTOR ENGINEERING, INC.

Package Material Composition and Mass Calculation

Customer: : GSI
 Package: : 14x22 209L LBGA
 Device Type: : GS864xx72C
 Die Size: : 378 X 647 mils
 Total Pck. Weight (g): 0.87834

	name	composition	CAS No.	%	mg.(ave)	mg.	%	PPM
Mold Compound	CEL-9750ZHF10AK-U					<u>356.67</u>	<u>40.61</u>	<u>406,073</u>
		Silica	60676-86-0	88-95%	326.53		37.18	371,760
		Epoxy resin1	Trade Secret	2-4%	10.70		1.22	12,182
		Epoxy resin2	Trade Secret	0.5-2%	4.46		0.51	5,076
		Phenolic resin	Trade Secret-2	1-3%	7.13		0.81	8,121
		Carbon black	1333-86-4	approx 0.2%	0.71		0.08	812
		Others	Trade Secret	approx 2%	7.13		0.81	8,121
Substrate	BT-substrate					<u>255.73</u>	<u>29.12</u>	<u>291,151</u>
GHPL830/CCL-HL832HS		SiO2	60676-86-0	10-12	28.13		3.20	32,027
AUS303		Acrylic	Trade Secret	9-11	25.57		2.91	29,115
		Epoxy	29690-82-2, 68541-56-0, 25068-38-6	6-10	20.46		2.33	23,292
		Bisphenol	13676-54-5	10-20	38.36		4.37	43,673
		Triazol	25722-66-1	15-20	44.75		5.10	50,952
		Cu	7440-50-8	30-40	93.07		10.60	105,965
		Ni	7440-02-0	1-2	3.84		0.44	4,367
		Au	7429-90-5	0.2-0.9	1.41		0.16	1,601
		Br	Trade Secret	0.01-0.1	0.14		0.02	160
Die	Silicon	Silicon	7440-21-3		75.72	<u>75.72</u>	<u>8.62</u>	<u>86,208</u>
Die Attach	FH-900T-25					<u>9.20</u>	<u>1.05</u>	<u>10,474</u>
		Novolak Epoxy Resin	Trade Secret	10-20	0.92		0.10	1,047
		Phenol Resin	Trade Secret	10-20	0.92		0.10	1,047
		Amorphous Silica	68611-44-9	0-10	0.46		0.05	524
		Acrylic Copolymer	Trade Secret	70-80	6.90		0.79	7,856
Wire	30um					<u>6.31</u>	<u>0.72</u>	<u>7,184</u>
		Au	7429-90-5	99.99	6.309		0.72	7,183
		Ion Impurities	Trade Secret	0.01	0.0006		0.00	1
External Plating	Solder Ball 63Sn/37Pb_0.6mm					<u>174.71</u>	<u>19.89</u>	<u>198,909</u>
		Tin (Sn)	7440-31-5	63	110.07		12.53	125,313
		Lead (Pb)	7439-92-1	37	64.64		7.36	73,596
Total						878.34	100	1000000

DISCLAIMER

- The above material declaration can be used only as reference in identifying the Hazardous material content of the product.
- ASE does not guarantee the Material composition accuracy as it is based on the data provided by outside sources and has not been validated.
- This material declaration does not include data from any active and passive component assembled in the package.