



**ASE** ADVANCED SEMICONDUCTOR ENGINEERING, INC.

**Package Material Composition and Mass Calculation**

Customer: : GSI  
 Package: : 15x17 165L SNW LBG  
 Device Type: : GS8644xxxE  
 Die Size / Thickness: : 10002X15050um / 4.5mil , 8611X13613um/4 mil , 10002X15050um / 4.5mil  
 Total Pck. Weight (g): 0.71403

	name	composition	CAS No.	%	mg.(ave)	mg.	%	PPM
Mold Compound	CEL-9750ZHF10AK-U					<u>276.09</u>	<u>38.67</u>	<u>386,664</u>
		Silica	60676-86-0	88-95%	252.76		35.40	353,991
		Epoxy resin1	Trade Secret	2-4%	8.28		1.16	11,600
		Epoxy resin2	Trade Secret	0.5-2%	3.45		0.48	4,833
		Phenolic resin	Trade Secret-2	1-3%	5.52		0.77	7,733
		Carbon black	1333-86-4	approx 0.2%	0.55		0.08	773
		Others	Trade Secret	approx 2%	5.52		0.77	7,733
Substrate	BT-substrate					<u>211.43</u>	<u>29.61</u>	<u>296,108</u>
		SiO2	60676-86-0	10-12	23.26		3.26	32,572
		Acrylic	Trade Secret	9-11	21.14		2.96	29,611
		Epoxy	29690-82-2, 68541-56-0, 25068-38-6	6-10	16.91		2.37	23,689
		Bisphenol	13676-54-5	10-20	31.71		4.44	44,416
		Triazine	25722-66-1	15-20	37.00		5.18	51,819
		Cu	7440-50-8	30-40	76.95		10.78	107,769
		Ni	7440-02-0	1-2	3.17		0.44	4,442
		Au	7440-57-5	0.2-0.9	1.16		0.16	1,629
		Br	Trade Secret	0.01-0.1	0.12		0.02	163
Die	Silicon	Silicon	7440-21-3		110.92	<u>110.92</u>	<u>15.53</u>	<u>155,344</u>
Die Attach	FH-900					<u>26.25</u>	<u>3.68</u>	<u>36,763</u>
		Novolak Epoxy Resin	Trade Secret	10-20	2.63		0.37	3,676
		Phenol Resin	Trade Secret	10-20	2.63		0.37	3,676
		Amorphous Silica	68611-44-9	0-10	1.31		0.18	1,838
		Acrylic Copolymer	Trade Secret	70-80	19.69		2.76	27,572
Wire	30um					<u>9.52</u>	<u>1.33</u>	<u>13,333</u>
		Au	7429-90-5	99.99	9.52		1.33	13,331
		Ion Impurities	Trade Secret	0.01	0.00		0.00	1
External Plating	Solder Ball ( 63Sn / 37Pb)_0.5mm					<u>79.82</u>	<u>11.18</u>	<u>111,788</u>
		Tin (Sn)	7440-31-5	63%	50.29		7.04	70,426
		Lead (Pb)	7439-92-1	37%	29.53		4.14	41,362
<b>Total</b>						<b>714.03</b>	<b>100</b>	<b>1000000</b>

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.