



Package Material Composition and Mass Calculation

Customer : NVL
 Package : nRF51822-CFAC Build A10
 Device Type : WLCSP
 Die Size(mm) : 3.79864x3.79864
 Total Pkg. Wt (g): 0.01267

Provided By : ASECL
 Date : 5/19/2017
 Rev. :

	name	material composition	CAS No.	%	mg.(ave)	mg.	%	PPM
Silicon	Silicon	Silicon	7440-21-3	100%		9.80308	<u>77.394%</u>	<u>773.937</u>
Polymer 1/2	PBO (HD8820)					0.29653	<u>2.341%</u>	<u>23.411</u>
		γ-Butyrolactone (γ-Butyrolact 96-48-0		45 - 55%	0.14826		1.171%	11,705
		1-Methoxy-2-propyl acetate (108-65-6		1 - 10%	0.01483		0.117%	1,171
		Ethanol (Ethanol)	64-17-5	<1%	0.00148		0.012%	117
		N-Methyl-2-pyrrolidone (N-M 872-50-4		<1%	0.00148		0.012%	117
		Non regulated ingredients (N Trade secret		<45%	0.13047		1.030%	10,301
RDL	RDL					0.08441	<u>0.666%</u>	<u>6.664</u>
		Titanium (Ti)	7440-32-6	31%	0.02597		0.205%	2,051
		Aluminum (Al)	7429-90-5	69%	0.05844		0.461%	4,614
UBM	UBM					0.02163	<u>0.171%</u>	<u>1.708</u>
		Aluminum (Al)	7429-90-5	10%	0.00212		0.017%	168
		Nickel Vanadium (NiV)	7440-02-0	26%	0.00569		0.045%	449
		Copper (Cu)	7440-50-8	64%	0.01382		0.109%	1,091
Solder Ball	SnAgCu405					1.93388	<u>15.268%</u>	<u>152.677</u>
		Tin (Sn)	7440-31-5	95.50%	1.84686		14.581%	145,806
		Silver (Ag)	7440-22-4	4%	0.07736		0.611%	6,107
		Copper(Cu)	7440-50-8	0.50%	0.00967		0.076%	763
BSC Film	LC-2850					0.52697	<u>4.160%</u>	<u>41.604</u>
		Polyethylene terephthalate	25038-59-9	60-80%	0.36888		2.912%	29,122
		Adhesive	Trade secret	17-45%	0.15809		1.248%	12,481
Total						12.67	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.