



**Package Material Composition and Mass Calculation**

Customer : NVL  
 Package : WLCSP  
 Device Type : nRF52805  
 Die Size(mm) : 2.482x2.464  
 Total Pkg. Wt (mg): 5.43226

Provided By : ASECL  
 Date : 7/3/2020  
 Rev. :

	name	material composition	CAS No.	%	mg.(ave)	mg.	%	PPM
Silicon	Silicon	Silicon	7440-21-3	100%		3.90150	<u>71.821%</u>	<u>718,210</u>
Polymer 1/2	PBO (HD8820)					0.10549	<u>1.942%</u>	<u>19,420</u>
		γ-Butyrolactone (γ-Butyrolact	96-48-0	45-55%	0.05326		0.981%	9,805
		1-methoxy-2-propyl acetate	108-65-6	1-10%	0.00527		0.097%	971
		1,4-Methoxy-2-propanol						
		Ethanol (Ethanol)	64-17-5	<1%	0.00053		0.010%	97
		N-Methyl-2-pyrrolidone (N-Mr	872-50-4	<1%	0.00001		0.000%	2
		Non regulated ingredients (N Trade secret		<=45%	0.04642		0.854%	8,545
RDL	RDL					0.22827	<u>4.202%</u>	<u>42,022</u>
		Titanium (Ti)	7440-32-6	100%	0.00275		0.051%	507
		Copper (Cu)	7440-50-8	100%	0.22552		4.152%	41,515
UBM	UBM					0.07900	<u>1.454%</u>	<u>14,543</u>
		Titanium (Ti)	7440-32-6	100%	0.00046		0.008%	84
		Copper (Cu)	7440-50-8	100%	0.07854		1.446%	14,458
Solder Ball	SnAgCu405					0.87337	<u>16.077%</u>	<u>160,774</u>
		Tin (Sn)	7440-31-5	90-100%	0.83406		15.354%	153,539
		Silver (Ag)	7440-22-4	4%	0.03493		0.643%	6,431
		Copper(Cu)	7440-50-8	0.1-3%	0.00437		0.080%	804
BSC	LC2850					0.24463	<u>4.503%</u>	<u>45,032</u>
		Silica	Trade secret	60%	0.14678		2.702%	27,019
		Epoxy Resin	Trade secret	12%	0.02936		0.540%	5,404
		Acrylic ester co-polymer	Trade secret	12%	0.02936		0.540%	5,404
		Additive	Trade secret	12%	0.02936		0.540%	5,404
		Carbon black	Trade secret	4%	0.00979		0.180%	1,801
<b>Total</b>						<b>5.43</b>	<b>100%</b>	<b>100000</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.