Package Material Composition and Mass Calculation

Customer : NVL
Package : WLCSP
Device Type : nRF5281x
Die Size(mm) : 2.482x2.464
Total Pkg. Wt (mg): **5.61**

Provided By : ASECL
Date : 7/14/2020
Rev. :

	name	**material composition**	**CAS No.**	**%**	**mg.(ave)**	**mg.**	**%**	**PPM**
Silicon	Silicon	Silicon	7440-21-3	100%		3.90150	69.516%	695,163
Polymer 1/2	PBO (HD8820)					0.10091	1.798%	17,980
		γ-Butyrolactone (γ-Butyrolact	96-48-0	45 - 55%	0.05095		0.908%	9,078
		1-Methoxy-2-propyl acetate (	108-65-6	1 - 10%	0.00505		0.090%	899
		Ethanol (Ethanol)	64-17-5	<1%	0.00050		0.009%	90
		N-Methyl-2-pyrrolidone (N-M	872-50-4	<1%	0.00001		0.000%	2
		Non regulated ingredients (N	Trade secret	<45%	0.04440		0.791%	7,911
RDL	RDL					0.23213	4.136%	41,361
		Titanium (Ti)	7440-32-6	100%	0.00276		0.049%	491
		Copper (Cu)	7440-50-8	100%	0.22937		4.087%	40,869
UBM	UBM					0.09469	1.687%	16,872
		Titanium (Ti)	7440-32-6	100%	0.00054		0.010%	96
		Copper (Cu)	7440-50-8	100%	0.09415		1.678%	16,775
Solder Ball	SnAgCu405					1.02932	18.340%	183,403
		Tin (Sn)	7440-31-5	95.50%	0.98300		17.515%	175,150
		Silver (Ag)	7440-22-4	4%	0.04117		0.734%	7,336
		Copper(Cu)	7440-50-8	0.50%	0.00515		0.092%	917
BSC Film	LC-2850					0.25380	4.522%	45,222
		Silica	60676-86-0	60%	0.15228		2.713%	27,133
		Epoxy Resin	Trade secret	12%	0.03046		0.543%	5,427
		Acrylic ester co-polymer	Trade secret	12%	0.03046		0.543%	5,427
		Additive	Trade secret	12%	0.03046		0.543%	5,427
		Carbon black	1333-86-4	4%	0.01015		0.181%	1,809
Total						**5.61**	**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.