



## Package Material Composition and Mass Calculation

Customer : NVL  
 Package : VFQFN 48L 6x6PKG  
 Device Type : nRF52832-QFAA#6X  
 Die Size(mm) : 2.976x3.246  
 Total Pkg. Wt (g): 0.11080

Provided By : Doris  
 Date : 2015/12/17  
 Rev. :

	name	vendor	material composition	CAS No.	%	mg.(ave)	mg.	%	PPM		
Mold Compound	CEL-9240HF	HITACHI	Solid Epoxy Resin-1	Trade secret	≤10%	3.06482	<u>47.15</u>	<u>42.556%</u>	<u>425,564</u>		
			Solid Epoxy Resin-2	Trade secret	≤2%	0.37721		2.766%	27,662		
			Solid Epoxy Resin-3	Trade secret	≤8%	1.41453		1.277%	12,767		
			Phenol Resin	Trade secret	≤8%	1.88604		1.702%	17,023		
			Carbon black	1333-86-4	Approx. 0.2%	0.09430		0.085%	851		
			Amorphous silica	60676-86-0	78-92%	39.60684		35.747%	357,473		
			Crystal silica	14808-60-7	<5%	0.70727		0.638%	6,383		
Leadframe	C194_Ag	MITSUI	Copper(Cu)	7440-50-8	92.05-97.835%	52.71709	<u>54.79</u>	<u>49.449%</u>	<u>494,492</u>		
			Iron(Fe)	7439-89-6	2.1-2.6%	1.28752		1.162%	11,621		
			Zinc(Zn)	7440-66-6	0.05-0.2%	0.07122		0.064%	643		
			Phosphorus(P)	7723-14-0	0.015-0.15%	0.04383		0.040%	396		
			Silver(Ag)	7440-22-4	5.0%Max.	0.66841		0.603%	6,033		
Die_1	Silicon		Silicon	7440-21-3	100%		<u>5.89</u>	<u>5.315%</u>	<u>53,150</u>		
Die Attach_1	EN-4900G*	HITACHI	Silver(Ag)	7440-22-4	72-82%	0.61734	<u>0.83</u>	<u>0.753%</u>	<u>7,530</u>		
			Acrylic resin	Trade secret	6-11%	0.07508		0.068%	678		
			Polybutadiene derivative	Trade secret	2-9%	0.04171		0.038%	376		
			Butadiene copolymer	Trade secret	< 2.0 %	0.01251		0.011%	113		
			Acrylate	Trade secret	3-8%	0.05005		0.045%	452		
			Epoxy resin	Trade secret	1-4%	0.02086		0.019%	188		
			Peroxide	Trade secret	< 1.0%	0.00417		0.004%	38		
			Additive	Trade secret	< 2.0%	0.01251		0.011%	113		
Wire_1	3N_Cu wire	NIPPON	Copper(Cu)	7440-50-8	≥96.9%	0.27741	<u>0.28</u>	<u>0.251%</u>	<u>2,507</u>		
			Palladium(Pd)	7440-05-3	≤3.1%	0.00033		0.0003%	3		
External Plating	Sn plating	SHENMAO									
			Tin(Sn)	7440-31-5	>99.97%	1.85674	<u>1.86</u>	<u>1.676%</u>	<u>16,758</u>		
<b>Total</b>							<b><u>110.80</u></b>	<b><u>100%</u></b>	<b><u>1000000</u></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.
- Due to Leadframe and substrate is belong "re-make product" by other homogeneous material , so it's composition will be different with MSDS