ASE ADVANCED SEMICONDUCTOR ENGINEERING,INC.

Package Material Composition and Mass Calculation

Customer :	NVL	Provided By :	Sara
Package :	VFQFN 48L 6x6PKG	Date :	7/16/2018
Device Type :	nRF52810-QFAA#3	Rev. :	
Die Size(mm) :	2.499x2.481		
Total Pkg. Wt (g):	**0.10787**		

	name	vendor	material composition	CAS No.	%	mg.(ave)	mg.	%	PPM
Mold Compound	EME-G700LA TypeLA	SUMITOMO					46.80	43.386%	433,859
			Epoxy Resin	Trade secret	5-10%	3.51000		3.254%	32,539
			Phenol Resin	Trade secret	1-5%	1.40400		1.302%	13,016
			Silica(Amorphous) A	60676-86-0	70-80%	35.10000		32.539%	325,394
			Silica(Amorphous) B	7631-86-9	10-20%	6.64560		6.161%	61,608
			Carbon black	1333-86-4	0.1 - 1%	0.14040		0.130%	1,302
Leadframe	C194_Ag	MITSUI(MJA)					55.29	51.252%	512,519
			Copper(Cu)	7440-50-8	97.22%	53.74810		49.827%	498,271
			Iron(Fe)	7439-89-6	2.29%	1.26603		1.174%	11,737
			Zinc(Zn)	7440-66-6	0.15%	0.08293		0.077%	769
			Phosphorus(P)	7723-14-0	0.03%	0.01659		0.015%	154
			Silver(Ag)	7440-22-4	0.31%	0.17138		0.159%	1,589
Die_1	Silicon		Silicon	7440-21-3	100%		3.02	2.803%	28,031
Die Attach 1	EN-4900G*	HITACHI					0.54	0.496%	4,964
			Silver(Ag)	7440-22-4	72-82%	0.39622		0.367%	3,673
			Acrylic resin	Trade secret	6-11%	0.04819		0.045%	447
			Polybutadiene derivative	Trade secret	2-9%	0.02677		0.025%	248
			Butadiene copolymer	Trade secret	< 2.0 %	0.00803		0.007%	74
			Acrylate	Trade secret	3-8%	0.03213		0.030%	298
			Epoxy resin	Trade secret	1-4%	0.01339		0.012%	124
			Peroxide	Trade secret	< 1.0%	0.00268		0.002%	25
			Additive	Trade secret	< 2.0%	0.00803		0.007%	74
Wire 1	3N Cu wire	TANAKA					0.37	0.341%	3,414
			Copper(Cu)	7440-50-8	Min96.49 wt%	0.36092		0.3346%	3,346
			Palladium(Pd)	7440-05-3	1.2 ~ 3.0 wt%	0.00663		0.0061%	61
			Gold(Au)	7440-57-5	0.01 ~ 0.5 wt%	0.00074		0.0007%	7
External Plating	Sn plating	SHENMAO					1.86	1.721%	17,213
			Tin(Sn)	7440-31-5	>99.97%	1.85674		1.721%	17,213
Total							**107.87**	**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.
- Due to Leadframe and substrate is belong "re-make product" by other homogeneous material , so it's composition will be different with SDS