



Package Material Composition and Mass Calculation

Customer : NVL
 Package : VFOFN 48L 6x6PKG
 Device Type : nRF52810-QFAA#3
 Die Size(mm) : 2.499x2.481
 Total Pkg. Wt (g): 0.10787

Provided By : Doris
 Date : 2017/9/18
 Rev. :

| | name | vendor | material composition | CAS No. | % | mg.(ave) | mg. | % | PPM |
|------------------|-------------------|-------------|--------------------------|--------------|----------------|----------|---------------|----------------|----------------|
| Mold Compound | EME-G700LA TypeLA | SUMITOMO | Epoxy Resin | Trade secret | 5-10% | 3.51000 | <u>46.80</u> | <u>43.386%</u> | <u>433.859</u> |
| | | | Phenol Resin | Trade secret | 1-5% | 1.40400 | | 3.254% | 32,539 |
| | | | Silica(Amorphous) A | 60676-86-0 | 70-80% | 35.10000 | | 32.539% | 325,394 |
| | | | Silica(Amorphous) B | 76361-86-9 | 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) | Copper(Cu) | 7440-50-8 | 97.22% | 53.74810 | <u>55.29</u> | <u>51.252%</u> | <u>512.519</u> |
| | | | 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% | | <u>3.02</u> | <u>2.803%</u> | <u>28.031</u> |
| Die Attach_1 | EN-4900G* | HITACHI | Silver(Ag) | 7440-22-4 | 72-82% | 0.39622 | <u>0.54</u> | <u>0.496%</u> | <u>4.964</u> |
| | | | 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 | Copper(Cu) | 7440-50-8 | Min96.49 wt% | 0.36092 | <u>0.37</u> | <u>0.341%</u> | <u>3.414</u> |
| | | | 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 | Tin(Sn) | 7440-31-5 | >99.97% | 1.85674 | <u>1.86</u> | <u>1.721%</u> | <u>17.213</u> |
| 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