

Chemicals contained in products

Package-type

Epson Package name; **QFP15-128PIN**

JEITA Package name; **P-LQFP128-1414-0.40**

Lead frame plating; **Lead(Pb) Free**

Weight; **0.69 [g] *Note1**

| Part | Subpart | Subpart weight [mg] | Substance name | CAS No. | Content *Note2 | | Application |
|-------------------------------------|----------------------|---------------------|--|--------------|----------------|----------------|---------------------------|
| | | | | | [mg] | [ppm] | |
| IC Die | IC Die | 15 | Silicon | 7440-21-3 | 15.4 | 999894 | Base material |
| | | | Boron | 7440-42-8 | 0.00003 | 2 | Dopant |
| | | | Phosphorus | 7723-14-0 | 0.0001 | 5 | Dopant |
| | | | Aluminum | 7429-90-5 | 0.0003 | 20 | Metalization |
| | | | Arsenic *Note3 | 7440-38-2 | 0.0001 | 5 | Dopant |
| | | | Fluorine *Note3 | 7782-41-4 | 0.00003 | 2 | Dopant |
| | | | Titanium *Note3 | 7440-32-6 | 0.0003 | 20 | Metalization |
| | | | Molybdenum *Note3 | 7439-98-7 | 0.0003 | 20 | Metalization |
| | | | Tungsten *Note3 | 7440-33-7 | 0.0005 | 30 | Metalization |
| | | | Cobalt *Note3 | 7440-48-4 | 0.00003 | 2 | Metalization |
| | Stress buffer coat | 0.31 | Polyimide | - | 0.31 | 1000000 | Stress buffer coat *Note4 |
| Package | Die Bonding material | 3.1 | Silver | 7440-22-4 | 2.1 | 680000 | Base material |
| | | | Epoxy resin | - | 0.64 | 205000 | Adhesive |
| | | | Phenol resin | - | 0.23 | 75000 | Adhesive |
| | | | Inorganic powder | - | 0.12 | 40000 | Additive |
| | Lead Frame Plating | 15 | Tin | 7440-31-5 | 14.6 | 980000 | Solder |
| | | | Bismuth | 7440-69-9 | 0.30 | 20000 | Solder |
| | Lead Frame | 180 | Copper | 7440-50-8 | 170 | 945000 | Conductor |
| | | | Silver | 7440-22-4 | 0.90 | 5000 | Inner lead plating |
| | | | Others *Note5 | - | 9.0 | 50000 | Additive |
| | Bonding Wire | 3.2 | Gold | 7440-57-5 | 3.2 | 1000000 | Conductor |
| | Mold resin | 473 | Epoxy resin | - | 52.0 | 110000 | Base material |
| | | | Antimony trioxide | 1309-64-4 | 3.8 | 8000 | Flame retardant |
| | | | Halogenated compound(Brominations epoxy) | - | 3.8 | 8000 | Flame retardant |
| | | | Silica | 60676-86-0/- | 356 | 753500 | Filler |
| Carbon black | | | 1333-86-4 | 4.7 | 10000 | Coloring agent | |
| Hardening chemical(ex:Phenol resin) | | | - | 52.0 | 110000 | Base material | |
| | | | Organic phosphorous compound | - | 0.24 | 500 | Hardening accelerator |
| | | | | | | | |
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Regarding the information of chemical substances

*Note1 The weight might be somewhat different depending on an individual built-in IC-chip specification like the size etc.

*Note2 Content data are estimated values based on supplier information and intended levels of content in product.

Actual measurements may vary from these values somewhat.

*Note3 Use or not-use of these substances depends on individual built-in IC-chip specification.

*Note4 The stress buffer coat may not be used depending on the individual model.

*Note5 The nickel, zinc, tin, silicon, iron, and the zinc oxide are included for the Cu type. And the carbon, silicon, and manganese are included for 42alloy type.