# Chemicals contained in products

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## Package-type

Epson Package name; **QFP20-184PIN / Halogen free**
JEITA Package name; **P-LQFP184-2020-0.40**
Terminal plating; **Lead(Pb) Free**
Weight; **1.38** [g]*Note1

| Part | Subpart | Subpart weight [mg] | Substance name | CAS No. | Content *Note2 | | Application |
|---|---|---|---|---|---|---|---|
| | | | | | [mg] | [ppm] | |
| IC Die | IC Die | 36.3 | Silicon | 7440-21-3 | 36.3 | 999894 | Base material |
| | | | Boron | 7440-42-8 | 0.000073 | 2 | Dopant |
| | | | Phosphorus | 7723-14-0 | 0.00018 | 5 | Dopant |
| | | | Aluminum | 7429-90-5 | 0.00073 | 20 | Metalization |
| | | | Arsenic *Note3 | 7440-38-2 | 0.00018 | 5 | Dopant |
| | | | Fluorine *Note3 | 7782-41-4 | 0.00007 | 2 | Dopant |
| | | | Titanium *Note3 | 7440-32-6 | 0.00073 | 20 | Metalization |
| | | | Molybdenum *Note3 | 7439-98-7 | 0.00073 | 20 | Metalization |
| | | | Tungsten *Note3 | 7440-33-7 | 0.0011 | 30 | Metalization |
| | | | Cobalt *Note3 | 7440-48-4 | 0.000073 | 2 | Metalization |
| | Stress buffer coat | 0.73 | Polyimide | - | 0.73 | 1000000 | Stress buffer coat *Note4 |
| Package | Die Bonding material | 4.1 | Silver | 7440-22-4 | 2.6 | 640000 | Base material |
| | | | Epoxy resin | - | 0.84 | 205000 | Adhesive |
| | | | Phenol resin | - | 0.33 | 80000 | Adhesive |
| | | | Inorganic powder | - | 0.19 | 48000 | Additive |
| | | | Bismuth compound | - | 0.11 | 27000 | Ion trap |
| | Lead Frame Plating | 20.2 | Tin | 7440-31-5 | 20.2 | 1000000 | Solder |
| | Lead Frame | 314.7 | Copper | 7440-50-8 | 297.4 | 945000 | Conductor |
| | | | Silver | 7440-22-4 | 1.6 | 5000 | Inner I ead plating |
| | | | Others *Note5 | - | 15.7 | 50000 | Additive |
| | Bonding Wire | 3.8 | Gold | 7440-57-5 | 3.8 | 1000000 | Conductor |
| | Mold resin | 1000.2 | Epoxy resin | - | 50.0 | 50000 | Base material |
| | | | Silica | 60676-86-0/- | 905.2 | 905000 | Filler |
| | | | Carbon black | 1333-86-4 | 5.0 | 5000 | Coloring agent |
| | | | Hardening chemical(ex:Phenol resin) | - | 40.0 | 40000 | Base material |

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.