

Chemicals contained in products

Package-type

Epson Package name; **PFBGA12U-180 / Halogen free**

JEITA Package name; **(P-TFBGA-180-1212-0.80)**

Solder ball Type; **Lead(Pb) Free**

Weight; **0.28 [g]** *Note1

| Part | Subpart | Subpart weight [mg] | Substance name | CAS No. | Content ※2 | | Application | | |
|---------|--------------------|------------------------|-------------------------------------|--------------|---------------|-----------|---------------------------|--------|-------------|
| | | | | | [mg] | [ppm] | | | |
| IC Die | IC Die | 13.9 | Silicon | 7440-21-3 | 13.9 | 999914 | Base material | | |
| | | | Boron | 7440-42-8 | 0.00003 | 2 | Dopant | | |
| | | | Phosphorus | 7723-14-0 | 0.00007 | 5 | Dopant | | |
| | | | Aluminum | 7429-90-5 | 0.0003 | 20 | Metalization | | |
| | | | Arsenic *Note3 | 7440-38-2 | 0.00007 | 5 | Dopant | | |
| | | | Fluorine *Note3 | 7782-41-4 | 0.00003 | 2 | Dopant | | |
| | | | Titanium *Note3 | 7440-32-6 | 0.0003 | 20 | Metalization | | |
| | | | Tungsten *Note3 | 7440-33-7 | 0.0004 | 30 | Metalization | | |
| | | | Cobalt *Note3 | 7440-48-4 | 0.00003 | 2 | Metalization | | |
| | Stress buffer coat | 0.28 | Polyimide | - | 0.28 | 1000000 | Stress buffer coat *Note4 | | |
| Package | Substrate | 61.1 | Glass-cloth | - | 10.70 | 175310 | Reinforcement | | |
| | | | Barium Sulfate | 7727-43-7 | 2.50 | 40790 | Additive | | |
| | | | Epoxy resin | - | 12.00 | 197180 | Base material | | |
| | | | Acrylate resin | - | 3.50 | 57800 | Base material | | |
| | | | Pigment | - | 1.60 | 25520 | Additive | | |
| | | | Organic filler | - | 0.21 | 3400 | Filler | | |
| | | | Zinc | 7440-66-6 | 0.056 | 920 | Characteristic preserve | | |
| | | | Chromium | 7440-47-3 | 0.0018 | 30 | Characteristic preserve | | |
| | | | Copper | 7440-50-8 | 25.60 | 419050 | Copper foil | | |
| | | | Nickel | 7440-02-0 | 3.90 | 64000 | Plating | | |
| | | | Gold | 7440-57-5 | 0.99 | 16000 | Plating | | |
| | | | Die Bonding material | 4.30 | Epoxy resin | - | 2.90 | 670000 | Adhesive |
| | | | | | Acrylic resin | - | 1.40 | 330000 | Adhesive |
| | | | Solder ball | 36.77 | Tin | 7440-31-5 | 35.20 | 957500 | Solder ball |
| | Silver | 7440-22-4 | | | 1.30 | 35000 | Solder ball | | |
| | Copper | 7440-50-8 | | | 0.27 | 7500 | Solder ball | | |
| | Bonding Wire | 3.80 | Gold | 7440-57-5 | 3.80 | 1000000 | Conductor | | |
| | Mold resin | 159.92 | Epoxy resin | - | 8.00 | 50000 | Base material | | |
| | | | Silica | 60676-86-0/- | 139.60 | 873000 | Filler | | |
| | | | Carbon black | 1333-86-4 | 0.32 | 2000 | Coloring agent | | |
| | | | Hardening chemical(ex:Phenol resin) | - | 8.00 | 50000 | Base material | | |
| | | | Organic phosphorous compound | - | 0.80 | 5000 | Hardening accelerator | | |
| | | | others | - | 3.20 | 20000 | Additive | | |

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.