

Chemicals contained in products

Package-type

Epson Package name; **PFBGA16U-280 / Mold : Halogen free**

JEITA Package name; **(P-TFBGA-280-1616-0.80)**

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

Weight; **0.49 [g] *Note1**

| Part | Subpart | Subpart weight [mg] | Substance name | CAS No. | Content ※2 | | Application |
|---------|--------------------|---------------------|--|--------------|-------------|----------|---------------------------|
| | | | | | [mg] | [ppm] | |
| c | IC Die | 29 | Silicon | 7440-21-3 | 28.8 | 999894 | Base material |
| | | | Boron | 7440-42-8 | 0.00006 | 2 | Dopant |
| | | | Phosphorus | 7723-14-0 | 0.0001 | 5 | Dopant |
| | | | Aluminum | 7429-90-5 | 0.0006 | 20 | Metalization |
| | | | Arsenic *Note3 | 7440-38-2 | 0.0001 | 5 | Dopant |
| | | | Fluorine *Note3 | 7782-41-4 | 0.00006 | 2 | Dopant |
| | | | Titanium *Note3 | 7440-32-6 | 0.0006 | 20 | Metalization |
| | | | Molybdenum *Note3 | 7439-98-7 | 0.0006 | 20 | Metalization |
| | | | Tungsten *Note3 | 7440-33-7 | 0.0009 | 30 | Metalization |
| | | | Cobalt *Note3 | 7440-48-4 | 0.00006 | 2 | Metalization |
| | Stress buffer coat | 0.58 | Polyimide | - | 0.58 | 1000000 | Stress buffer coat *Note4 |
| Package | Substrate | 108 | Glass-cloth | - | 5.6 | 52140 | Reinforcement |
| | | | Silica | - | 2.8 | 26180 | Filler |
| | | | Halogenated compound(Brominations epoxy) | - | 8.8 | 81400 | Flame retardant |
| | | | Epoxy resin | - | 9.3 | 86280 | Base material |
| | | | Acrylate resin | - | 5.9 | 54600 | Base material |
| | | | Pigment | - | 5.0 | 46800 | Additive |
| | | | Organic filler | - | 0.28 | 2600 | Filler |
| | | | Arsenic | 7440-38-2 | 0.003 | 26 | Burning resistance |
| | | | Chromium compound | - | 0.002 | 20 | Burning resistance |
| | | | Copper | 7440-50-8 | 67.7 | 629154 | Copper foil |
| | | | Nickel | 7440-02-0 | 1.8 | 16900 | Plating |
| | | | Gold | 7440-57-5 | 0.42 | 3900 | Plating |
| | | | Die Bonding material | 7.5 | Epoxy resin | - | 5.1 |
| | Acrylic resin | - | | | 2.5 | 330000 | Adhesive |
| | Solder ball | 57 | Tin | 7440-31-5 | 54.5 | 957500 | Solder ball |
| | | | Silver | 7440-22-4 | 2.0 | 35000 | Solder ball |
| | | | Copper | 7440-50-8 | 0.43 | 7500 | Solder ball |
| | Bonding Wire | 9 | Gold | 7440-57-5 | 8.8 | 1000000 | Conductor |
| | Mold resin | 280 | Epoxy resin | - | 14.0 | 50000 | Base material |
| | | | Silica | 60676-86-0/- | 244.30 | 873000 | Filler |
| | | | Carbon black | 1333-86-4 | 0.6 | 2000 | Coloring agent |
| | | | Hardening chemical(ex:Phenol resin) | - | 14 | 50000 | Base material |
| | | | Organic phosphorous compound | - | 1.40 | 5000 | Hardening accelerator |
| | | others | - | 5.6 | 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.