# Chemicals contained in products

EPSON
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## Package-type

Epson Package name ; **VFBGA5H-81 / Halogen free**
JEITA Package name ; **(P-VFBGA-081-0505-0.50)**
Solder ball Type ; **Lead(Pb) Free**
Weight ; **0.04** [g] *Note1

| Part | Subpart | Subpart weight [mg] | Substance name | CAS No. | Content *Note2 [mg] | [ppm] | Application |
|---|---|---|---|---|---|---|---|
| IC Die | IC Die | 6.6 | Silicon | 7440-21-3 | 6.6 | 999894 | Base material |
| | | | Boron | 7440-42-8 | 0.00001 | 2 | Dopant |
| | | | Phosphorus | 7723-14-0 | 0.00003 | 5 | Dopant |
| | | | Aluminum | 7429-90-5 | 0.0001 | 20 | Metalization |
| | | | Arsenic *Note3 | 7440-38-2 | 0.00003 | 5 | Dopant |
| | | | Fluorine *Note3 | 7782-41-4 | 0.00001 | 2 | Dopant |
| | | | Titanium *Note3 | 7440-32-6 | 0.0001 | 20 | Metalization |
| | | | Molybdenum *Note3 | 7439-98-7 | 0.0001 | 20 | Metalization |
| | | | Tungsten *Note3 | 7440-33-7 | 0.0002 | 30 | Metalization |
| | | | Cobalt *Note3 | 7440-48-4 | 0.00001 | 2 | Metalization |
| | Stress buffer coat | 0.13 | Polyimide | - | 0.13 | 1000000 | Stress buffer coat *Note4 |
| Package | Substrate | 9.1 | Glass-cloth | - | 1.60 | 175310 | Reinforcement |
| | | | Silica | - | 0.37 | 40790 | Filler |
| | | | Epoxy resin | - | 1.80 | 197180 | Base material |
| | | | Acrylate resin | - | 0.53 | 57800 | Base material |
| | | | Pigment | - | 0.23 | 25520 | Additive |
| | | | Organic filler | - | 0.03 | 3400 | Filler |
| | | | Zinc | 7440-66-6 | 0.01 | 920 | Burning resistance |
| | | | Chromium | 7440-47-3 | 0.0003 | 30 | Burning resistance |
| | | | Copper | 7440-50-8 | 3.80 | 419050 | Copper foil |
| | | | Nickel | 7440-02-0 | 0.58 | 64000 | Plating |
| | | | Gold | 7440-57-5 | 0.15 | 16000 | Plating |
| | Die Bonding material | 0.64 | Epoxy resin | - | 0.43 | 670000 | Adhesive |
| | | | Acrylic resin | - | 0.21 | 330000 | Adhesive |
| | Solder ball | 6.06 | Tin | 7440-31-5 | 5.80 | 957500 | Solder ball |
| | | | Silver | 7440-22-4 | 0.21 | 35000 | Solder ball |
| | | | Copper | 7440-50-8 | 0.05 | 7500 | Solder ball |
| | Bonding Wire | 0.16 | Gold | 7440-57-5 | 0.16 | 1000000 | Conductor |
| | Mold resin | 17.27 | Epoxy resin | - | 0.85 | 50000 | Base material |
| | | | Silica | 60676-86-0/- | 15.10 | 873000 | Filler |
| | | | Carbon black | 1333-86-4 | 0.04 | 2000 | Coloring agent |
| | | | Hardening chemical(ex:Phenol resin) | - | 0.85 | 50000 | Base material |
| | | | Organic phosphorous compound | - | 0.09 | 5000 | Hardening accelerator |
| | | | others | - | 0.35 | 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.