Chemicals contained in products

Package-type

Epson Package name; **PFBGA8U-181 / Halogen free**
JEITA Package name; **(P-TFBGA-181-0808-0.50)**
Solder ball Type; **Lead(Pb) Free**
Weight; **0.13** [g] *Note1

Part	Subpart	Subpart weight [mg]	Substance name	CAS No.	Content ※2 [mg]	Content ※2 [ppm]	Application
IC Die	IC Die	24.3	Silicon	7440-21-3	24.3	999914	Base material
			Boron	7440-42-8	0.00005	2	Dopant
			Phosphorus	7723-14-0	0.0001	5	Dopant
			Aluminum	7429-90-5	0.0005	20	Metalization
			Arsenic *Note3	7440-38-2	0.0001	5	Dopant
			Fluorine *Note3	7782-41-4	0.00005	2	Dopant
			Titanium *Note3	7440-32-6	0.0005	20	Metalization
			Tungsten *Note3	7440-33-7	0.0007	30	Metalization
			Cobalt *Note3	7440-48-4	0.00005	2	Metalization
	Stress buffer coat	0.49	Polyimide	-	0.49	1000000	Stress buffer coat *Note4
Package	Substrate	25.3	Glass-cloth	-	4.40	175310	Reinforcement
			Barium Sulfate	7727-43-7	1.00	40790	Additive
			Epoxy resin	-	5.00	197180	Base material
			Acrylate resin	-	1.50	57800	Base material
			Pigment	-	0.64	25520	Additive
			Organic filler	-	0.08	3400	Filler
			Zinc	7440-66-6	0.023	920	Characteristic preserve
			Chromium	7440-47-3	0.0008	30	Characteristic preserve
			Copper	7440-50-8	10.60	419050	Copper foil
			Nickel	7440-02-0	1.60	64000	Plating
			Gold	7440-57-5	0.41	16000	Plating
	Die Bonding material	1.68	Epoxy resin	-	1.10	670000	Adhesive
			Acrylic resin	-	0.58	330000	Adhesive
	Solder ball	14.52	Tin	7440-31-5	13.90	957500	Solder ball
			Silver	7440-22-4	0.51	35000	Solder ball
			Copper	7440-50-8	0.11	7500	Solder ball
	Bonding Wire	0.84	Gold	7440-57-5	0.84	1000000	Conductor
	Mold resin	62.83	Epoxy resin	-	3.10	50000	Base material
			Silica	60676-86-0/-	55.00	873000	Filler
			Carbon black	1333-86-4	0.12	2000	Coloring agent
			Hardening chemical(ex:Phenol resin)	-	3.10	50000	Base material
			Organic phosphorous compound	-	0.31	5000	Hardening accelerator
			others	-	1.20	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.