Chemicals contained in products

Package-type

Epson Package name; **PFBGA12U-180 / Mold : 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 [mg]	Content ※2 [ppm]	Application
IC Die	IC Die	18	Silicon	7440-21-3	18.3	999894	Base material
			Boron	7440-42-8	0.00004	2	Dopant
			Phosphorus	7723-14-0	0.0001	5	Dopant
			Aluminum	7429-90-5	0.0004	20	Metalization
			Arsenic *Note3	7440-38-2	0.0001	5	Dopant
			Fluorine *Note3	7782-41-4	0.00004	2	Dopant
			Titanium *Note3	7440-32-6	0.0004	20	Metalization
			Molybdenum *Note3	7439-98-7	0.0004	20	Metalization
			Tungsten *Note3	7440-33-7	0.0005	30	Metalization
			Cobalt *Note3	7440-48-4	0.00004	2	Metalization
	Stress buffer coat	0.37	Polyimide	-	0.37	1000000	Stress buffer coat *Note4
Package	Substrate	61	Glass-cloth	-	3.2	52140	Reinforcement
			Silica	-	1.6	26180	Filler
			Halogenated compound(Brominations epoxy)	-	4.9	81400	Flame retardant
			Epoxy resin	-	5.3	86280	Base material
			Acrylate resin	-	3.3	54600	Base material
			Pigment	-	2.9	46800	Additive
			Organic filler	-	0.16	2600	Filler
			Arsenic	7440-38-2	0.002	26	Burning resistance
			Chromium compound	-	0.001	20	Burning resistance
			Copper	7440-50-8	38.2	629154	Copper foil
			Nickel	7440-02-0	0.99	16900	Plating
			Gold	7440-57-5	0.24	3900	Plating
	Die Bonding material	4.3	Epoxy resin	-	2.9	670000	Adhesive
			Acrylic resin	-	1.4	330000	Adhesive
	Solder ball	37	Tin	7440-31-5	35.1	957500	Solder ball
			Silver	7440-22-4	1.3	35000	Solder ball
			Copper	7440-50-8	0.27	7500	Solder ball
	Bonding Wire	3.5	Gold	7440-57-5	3.5	1000000	Conductor
	Mold resin	156	Epoxy resin	-	7.8	50000	Base material
			Silica	60676-86-0/-	136.30	873000	Filler
			Carbon black	1333-86-4	0.31	2000	Coloring agent
			Hardening chemical(ex:Phenol resin)	-	8	50000	Base material
			Organic phosphorous compound	-	0.78	5000	Hardening accelerator
			others	-	3.1	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.