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	13.90	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	38.16	Glass-cloth	-	6.69	175310	Reinforcement
			Barium Sulfate	7727-43-7	1.56	40790	Additive
			Epoxy resin	-	7.52	197180	Base material
			Acrylate resin	-	2.21	57800	Base material
			Pigment	-	0.97	25520	Additive
			Organic filler	-	0.130	3400	Filler
			Zinc	7440-66-6	0.035	920	Characteristic preserve
			Chromium	7440-47-3	0.0011	30	Characteristic preserve
			Copper	7440-50-8	15.99	419050	Copper foil
			Nickel	7440-02-0	2.44	64000	Plating
			Gold	7440-57-5	0.61	16000	Plating
	Die Bonding material	0.63	Ester resin	-	0.06	100000	Adhesive
			Epoxy resin	-	0.49	770000	Adhesive
			Silica	15468-32-3	0.08	130000	Filler
	Solder ball	43.33	Tin	7440-31-5	41.81	964900	Solder ball
			Silver	7440-22-4	1.30	30000	Solder ball
			Copper	7440-50-8	0.22	5000	Solder ball
			Nickel	7440-02-0	0.00	100	Solder ball
	Bonding Wire	1.77	Copper	7440-50-8	1.77	1000000	Conductor
	Mold resin	182.20	Silica	60676-86-0	163.71	898500	Filler
			Epoxy resin	-	10.02	55000	Base material
			Carbon black	1333-86-4	0.27	1500	Coloring agent
			Phenol resin	-	8.20	45000	Base material

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.