

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		Application		
					[mg]	[ppm]			
IC Die	IC Die	24.3	Silicon	7440-21-3	24.3	999894	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		
			Molybdenum *Note3	7439-98-7	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		
			Silica	-	1.00	40790	Filler		
			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	Burning resistance		
			Chromium	7440-47-3	0.0008	30	Burning resistance		
			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.