

Chemicals contained in products

Package-type

Epson Package name; **PFBGA7U-144 / Halogen free**

JEITA Package name; **(P-TFBGA-144-0707-0.50)**

Solder ball Type; **Lead(Pb) Free**

Weight; **0.09 [g]** *Note1

Part	Subpart	Subpart weight [mg]	Substance name	CAS No.	Content ※2		Application		
					[mg]	[ppm]			
IC Die	IC Die	21.00	Silicon	7440-21-3	21.0	999914	Base material		
			Boron	7440-42-8	0.00004	2	Dopant		
			Phosphorus	7723-14-0	0.00011	5	Dopant		
			Aluminum	7429-90-5	0.0004	20	Metalization		
			Arsenic *Note3	7440-38-2	0.00011	5	Dopant		
			Fluorine *Note3	7782-41-4	0.00004	2	Dopant		
			Titanium *Note3	7440-32-6	0.0004	20	Metalization		
			Tungsten *Note3	7440-33-7	0.0006	30	Metalization		
			Cobalt *Note3	7440-48-4	0.00004	2	Metalization		
Package	Stress buffer coat	0.42	Polyimide	-	0.42	1000000	Stress buffer coat *Note4		
	Substrate	9.37	Glass-cloth	-	1.64	175310	Reinforcement		
			Barium Sulfate	7727-43-7	0.38	40790	Additive		
			Epoxy resin	-	1.85	197180	Base material		
			Acrylate resin	-	0.54	57800	Base material		
			Pigment	-	0.24	25520	Additive		
			Organic filler	-	0.032	3400	Filler		
			Zinc	7440-66-6	0.009	920	Characteristic preserve		
			Chromium	7440-47-3	0.0003	30	Characteristic preserve		
			Copper	7440-50-8	3.92	419050	Copper foil		
			Nickel	7440-02-0	0.60	64000	Plating		
			Gold	7440-57-5	0.15	16000	Plating		
			Die Bonding material	0.37	Ester resin	-	0.04	100000	Adhesive
					Epoxy resin	-	0.29	770000	Adhesive
	Silica	15468-32-3			0.05	130000	Filler		
	Solder ball	10.54	Tin	7440-31-5	10.17	964900	Solder ball		
			Silver	7440-22-4	0.32	30000	Solder ball		
			Copper	7440-50-8	0.05	5000	Solder ball		
			Nickel	7440-02-0	0.001	100	Solder ball		
	Bonding Wire	0.29	Copper	7440-50-8	0.29	1000000	Conductor		
	Mold resin	48.02	Silica	60676-86-0	43.14	898500	Filler		
			Epoxy resin	-	2.64	55000	Base material		
			Carbon black	1333-86-4	0.07	1500	Coloring agent		
			Phenol resin	-	2.16	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.