

# Chemicals contained in products

## Package-type

Epson Package name; **PFBGA5U-60 / Halogen free**

JEITA Package name; **(P-TFBGA-060-0505-0.50)**

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

Weight; **0.050 [g]** \*Note1

Part	Subpart	Subpart weight [mg]	Substance name	CAS No.	Content ※2		Application		
					[mg]	[ppm]			
IC Die	IC Die	7.7	Silicon	7440-21-3	7.7	999914	Base material		
			Boron	7440-42-8	0.00002	2	Dopant		
			Phosphorus	7723-14-0	0.00004	5	Dopant		
			Aluminum	7429-90-5	0.0002	20	Metalization		
			Arsenic *Note3	7440-38-2	0.00004	5	Dopant		
			Fluorine *Note3	7782-41-4	0.00002	2	Dopant		
			Titanium *Note3	7440-32-6	0.0002	20	Metalization		
			Tungsten *Note3	7440-33-7	0.0002	30	Metalization		
IC Die	Stress buffer coat	0.15	Cobalt *Note3	7440-48-4	0.00002	2	Metalization		
			Polyimide	-	0.15	1000000	Stress buffer coat *Note4		
Package	Substrate	9.9	Glass-cloth	-	1.70	175310	Reinforcement		
			Barium Sulfate	7727-43-7	0.40	40790	Additive		
			Epoxy resin	-	1.90	197180	Base material		
			Acrylate resin	-	0.58	57800	Base material		
			Pigment	-	0.26	25520	Additive		
			Organic filler	-	0.03	3400	Filler		
			Zinc	7440-66-6	0.01	920	Characteristic preserve		
			Chromium	7440-47-3	0.000	30	Characteristic preserve		
			Copper	7440-50-8	4.20	419050	Copper foil		
			Nickel	7440-02-0	0.64	64000	Plating		
			Gold	7440-57-5	0.16	16000	Plating		
			Die Bonding material	0.70	Epoxy resin	-	0.47	670000	Adhesive
					Acrylic resin	-	0.23	330000	Adhesive
	Solder ball	4.91	Tin	7440-31-5	4.70	957500	Solder ball		
			Silver	7440-22-4	0.17	35000	Solder ball		
			Copper	7440-50-8	0.04	7500	Solder ball		
	Bonding Wire	0.48	Gold	7440-57-5	0.48	1000000	Conductor		
	Mold resin	26.10	Epoxy resin	-	1.20	50000	Base material		
			Silica	60676-86-0/-	0.93	873000	Filler		
			Carbon black	1333-86-4	23.10	2000	Coloring agent		
			Hardening chemical(ex:Phenol resin)	-	0.05	50000	Base material		
			Organic phosphorous compound	-	0.19	5000	Hardening accelerator		
	others	-	0.63	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.