

# Chemicals contained in products

## Package-type

Epson Package name; **PFBGA16U-280 / Halogen free**

JEITA Package name; **(P-TFBGA-280-1616-0.80)**

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

Weight; **0.49 [g]** \*Note1

Part	Subpart	Subpart weight [mg]	Substance name	CAS No.	Content ※2		Application		
					[mg]	[ppm]			
IC Die	IC Die	28.2	Silicon	7440-21-3	28.2	999914	Base material		
			Boron	7440-42-8	0.00006	2	Dopant		
			Phosphorus	7723-14-0	0.0001	5	Dopant		
			Aluminum	7429-90-5	0.0006	20	Metalization		
			Arsenic *Note3	7440-38-2	0.0001	5	Dopant		
			Fluorine *Note3	7782-41-4	0.00006	2	Dopant		
			Titanium *Note3	7440-32-6	0.0006	20	Metalization		
			Tungsten *Note3	7440-33-7	0.0008	30	Metalization		
			Cobalt *Note3	7440-48-4	0.00006	2	Metalization		
	Stress buffer coat	0.56	Polyimide	-	0.56	1000000	Stress buffer coat *Note4		
Package	Substrate	107.7	Glass-cloth	-	18.90	175310	Reinforcement		
			Barium Sulfate	7727-43-7	4.40	40790	Additive		
			Epoxy resin	-	21.20	197180	Base material		
			Acrylate resin	-	6.20	57800	Base material		
			Pigment	-	2.80	25520	Additive		
			Organic filler	-	0.37	3400	Filler		
			Zinc	7440-66-6	0.10	920	Characteristic preserve		
			Chromium	7440-47-3	0.003	30	Characteristic preserve		
			Copper	7440-50-8	45.10	419050	Copper foil		
			Nickel	7440-02-0	6.90	64000	Plating		
			Gold	7440-57-5	1.70	16000	Plating		
			Die Bonding material	7.60	Epoxy resin	-	5.10	670000	Adhesive
					Acrylic resin	-	2.50	330000	Adhesive
			Solder ball	56.93	Tin	7440-31-5	54.50	957500	Solder ball
	Silver	7440-22-4			2.00	35000	Solder ball		
	Copper	7440-50-8			0.43	7500	Solder ball		
	Bonding Wire	9.10	Gold	7440-57-5	9.10	1000000	Conductor		
	Mold resin	280.16	Epoxy resin	-	14.00	50000	Base material		
			Silica	60676-86-0/-	244.60	873000	Filler		
			Carbon black	1333-86-4	0.56	2000	Coloring agent		
			Hardening chemical(ex:Phenol resin)	-	14.00	50000	Base material		
			Organic phosphorous compound	-	1.40	5000	Hardening accelerator		
	others	-	5.60	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.