

Chemicals contained in products

Package-type

Epson Package name; **VFPGA4H-49 / Halogen free**

JEITA Package name; **(P-VFPGA-049-0404-0.50)**

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

Weight; **0.03 [g]** *Note1

Part	Subpart	Subpart weight [mg]	Substance name	CAS No.	Content *Note2		Application
					[mg]	[ppm]	
IC Die	IC Die	4.0	Silicon	7440-21-3	4.0	999894	Base material
			Boron	7440-42-8	0.00001	2	Dopant
			Phosphorus	7723-14-0	0.00002	5	Dopant
			Aluminum	7429-90-5	0.0001	20	Metalization
			Arsenic *Note3	7440-38-2	0.00002	5	Dopant
			Fluorine *Note3	7782-41-4	0.00001	2	Dopant
			Titanium *Note3	7440-32-6	0.0001	20	Metalization
			Molybdenum *Note3	7439-98-7	0.0001	20	Metalization
			Tungsten *Note3	7440-33-7	0.0001	30	Metalization
			Cobalt *Note3	7440-48-4	0.00001	2	Metalization
	Stress buffer coat	0.08	Polyimide	-	0.08	1000000	Stress buffer coat *Note4
Package	Substrate	7.0	Glass-cloth	-	1.20	175310	Reinforcement
			Silica	-	0.29	40790	Filler
			Epoxy resin	-	1.40	197180	Base material
			Acrylate resin	-	0.41	57800	Base material
			Pigment	-	0.18	25520	Additive
			Organic filler	-	0.02	3400	Filler
			Zinc	7440-66-6	0.01	920	Burning resistance
			Chromium	7440-47-3	0.0002	30	Burning resistance
			Copper	7440-50-8	2.90	419050	Copper foil
			Nickel	7440-02-0	0.46	64000	Plating
	Gold	7440-57-5	0.11	16000	Plating		
	Die Bonding material	0.50	Epoxy resin	-	0.34	670000	Adhesive
			Acrylic resin	-	0.16	330000	Adhesive
	Solder ball	4.39	Tin	7440-31-5	4.20	957500	Solder ball
			Silver	7440-22-4	0.16	35000	Solder ball
			Copper	7440-50-8	0.03	7500	Solder ball
	Bonding Wire	0.20	Gold	7440-57-5	0.20	1000000	Conductor
	Mold resin	13.74	Epoxy resin	-	0.68	50000	Base material
			Silica	60676-86-0/-	12.00	873000	Filler
			Carbon black	1333-86-4	0.03	2000	Coloring agent
Hardening chemical(ex:Phenol resin)			-	0.68	50000	Base material	
Organic phosphorous compound			-	0.07	5000	Hardening accelerator	
		others	-	0.28	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.