

# Chemicals contained in products

## Package-type

Epson Package name; **QFP13-52PIN / Halogen free**

JEITA Package name; **(P-LQFP052-1010-0.65)**

Lead frame plating; **Lead(Pb) Free**

Weight; **0.35 [g]** \*Note1

Part	Subpart	Subpart weight [mg]	Substance name	CAS No.	Content *Note2		Application
					[mg]	[ppm]	
IC Die	IC Die	17	Silicon	7440-21-3	17.2	999894	Base material
			Boron	7440-42-8	0.00003	2	Dopant
			Phosphorus	7723-14-0	0.0001	5	Dopant
			Aluminum	7429-90-5	0.0003	20	Metalization
			Arsenic *Note3	7440-38-2	0.00009	5	Dopant
			Fluorine *Note3	7782-41-4	0.00003	2	Dopant
			Titanium *Note3	7440-32-6	0.0003	20	Metalization
			Molybdenum *Note3	7439-98-7	0.0003	20	Metalization
			Tungsten *Note3	7440-33-7	0.001	30	Metalization
	Cobalt *Note3		7440-48-4	0.00003	2	Metalization	
	Stress buffer coat	0.34	Polyimide	-	0.34	1000000	Stress buffer coat *Note4
Package	Die Bonding material	1.2	Silver	7440-22-4	1.1	910000	Base material
			Acrylic resin	-	0.09	70000	Adhesive
			Epoxy resin	-	0.024	20000	Adhesive
	Lead Frame Plating	106.0	Tin	7440-31-5	105.4	980000	Solder
			Bismuth	7440-69-9	0.56	20000	Solder
			Copper	7440-50-8	5.6	945000	Conductor
	Lead Frame	8	Silver	7440-22-4	2.05	5000	Inner Lead plating
			Others *Note5	-	0.0	50000	Additive
			Gold	7440-57-5	0.46	1000000	Conductor
	Bonding Wire	0.46	Gold	7440-57-5	0.46	1000000	Conductor
	Mold resin	217	Epoxy resin	-	13.7	63000	Base material
			Silica	60676-86-0/-	9	880000	Filler
			Carbon black	1333-86-4	191.08	2000	Coloring agent
Hardening chemical(ex:Phenol resin)			-	0.4	40000	Base material	
Organic phosphorous compound			-	1.1	5000	Hardening accelerator	
others			-	2.2	10000	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.

\*Note5 The nickel, zinc, tin, silicon, iron, and the zinc oxide are included for the Cu type. And the carbon, silicon, and manganese are included for 42alloy type.