



Package Material Composition and Mass Calculation

Customer: GSI
 Package: 14X22 HFC BGA 260L
 Device Type: GS81313xxxxGK
 Die Size: 12.189x12.635 mm
 Total Pck. Weight (mg): 1821.7

Provided By: IvanRC Chen
 Date: 2019/1/22

	name	composition	CAS No.	%	mg (ave)	mg	%	PPM
underfill	ASE UA32					26	1.43	14,273
		1,6-Bis(2,3-epoxypropoxy)naphthalene	27610-48-6	10~20	3.90		0.21	2,141
		Bisphenol F type liquid epoxy resin	9003-36-5	5~15	2.60		0.14	1,427
		Bisphenol A type liquid epoxy resin	25068-38-6	5~	0.65		0.04	357
		Amine type hardener	trade secret	5~15	2.60		0.14	1,427
		Silicon dioxide	60676-86-0	55~65	15.47		0.85	8,492
		Carbon black	1333-86-4	1>	0.13		0.01	71
		Additive	trade secret	5>	0.65		0.04	357
Substrate	AUS 320					412.9	22.67	226,660
		Acrylate resin	Trade secret	1.27%	5.26		1.27	12,700
		Acrylated monomer	Trade secret	0.20%	0.81		0.20	2,000
		Epoxy resin (MW ≤ 7 0 0 , Carc. cat. 3 ; R40 , R43)	85954-11-6	0.53%	2.18		0.53	5,300
		Phthalocyanine blue	147-14-8	0.01%	0.03		0.01	100
		Organic pigment	Trade secret	0.01%	0.03		0.01	100
		Barium sulfate	7727-43-7	0.59%	2.45		0.59	5,900
		Talc containing no asbestiform fibersTalc滑石 (不含石棉纖維)	14807-96-6	0.13%	0.54		0.13	1,300
		Silica, amorphous	7631-86-9	0.03%	0.14		0.03	300
		Phosphin oxide derivative	Trade secret	0.14%	0.57		0.14	1,400
		Antifoamer & Leveling agent	Trade secret	0.05%	0.22		0.05	500
		Amine compounds	Trade secret	0.01%	0.03		0.01	100
		Dipropylene glycol monomethylether	34590-94-8	0.22%	0.93		0.22	2,200
		Solvent naphtha(petroleum),Heavy arom.	64742-94-5	0.41%	1.70		0.41	4,100
		Naphthalene (Carc . Cat. 3 ; R40)	91-20-3	0.03%	0.14		0.03	300
		Dipropylene glycol monomethyl ether acetate	88917-22-0	0.07%	0.28		0.07	700
		Diethylene glycol monoethyl ether acetate 乙二醇單乙基醋酸酯	112-15-2	0.45%	1.87		0.45	4,500
	HL832_NXA	Epoxy Resin	9003-36-5	11.85%	48.92		11.85	118,500
		Inorganic Filler	21645-51-2	7.11%	29.35		7.11	71,100
		Continuous Filament Fiber Glass	65997-17-3	11.85%	48.92		11.85	118,500
		Copper	7440-50-8	16.59%	68.49		16.59	165,900
	GHPL830_NXA	Continuous Filament Fiber Glass	65997-17-3	10.37%	42.80		10.37	103,700
		Inorganic Filler	Trade Secret	5.18%	21.40		5.18	51,800
		Thermosetting Resin	Trade Secret	10.37%	42.80		10.37	103,700
		Copper	7440-50-8	3.20%	13.19		3.20	32,000
		Copper	7440-50-8	13.58%	56.06		13.58	135,800
	Copper Foil	Tin	7440-31-5	4.68%	19.31		4.68	46,800
	Copper Plating	Silver	7440-22-4	0.14%	0.59		0.14	1,400
	solder paste	copper	7440-50-8	0.02%	0.09		0.02	200
		vehicle	Trade secret	0.70%	2.88		0.70	7,000
	Tin	Tin	7440-31-5	0.22%	0.89		0.22	2,200
Thermally conductive silicon	AD01					11	0.604	6,038
		Aluminum oxide	1344-28-1	45	4.95		0.27	2,717
		Vinylpolydimethylsiloxane	68083-19-2	27.5	3.03		0.17	1,661
		Vinyl containing resin	68584-83-8	3	0.33		0.02	181
		Treated Filler	68909-20-6	24.5	2.70		0.15	1,479
Die	Silicon	Silicon	7440-21-3	100	162.60	162.6	8.926	89,259
Bump	98.2Sn/1.8Ag					9.3	0.511	5105.192
		98.2Sn of Bump	7440-31-5	98.2	9.13		0.501	5013.298
		1.8Ag of Bump	7440-22-4	1.8	0.17		0.009	91.893
Solder ball	SnAgCu 95.5/4/0.5_0.6mm					223.8	12.29	122,854
		Tin	7440-31-5	95.5	213.73		11.73	117,326
		Silver	7440-22-4	4.0	8.95		0.49	4,914
		Copper	7440-50-8	0.5	1.12		0.06	614
Heatslug	(Copper/Nickel/Chrome)					976.075	53.58	535,812
		Copper	7440-50-8	99.35	970		53.23	532,329
		Nickel	7440-02-0	0.6	5.86		0.32	3,215
		Chrome	-	0.05	0.49		0.03	268
Total						1821.675	100	1000000