

PACKAGE MATERIAL DECLARATION DATASHEET

Cypress Package Code	BV	Body Size (mil/mm)	6 x 8 mm
Package Weight – Site 1	B1: 101.0100 mg B2: 100.1561 mg	Package Weight – Site 2	76.9200 mg
Package Weight – Site 3	B1: 70.3281 mg		

SUMMARY

The 48-VFBGA is a Non Pb-Free package. Standard components (Non Pb-Free) currently in production are RoHS 5 compliant. Standard components may contain Pb, but do not contain the other 5 substances (above allowable levels).

ASSEMBLY Site 1: Advanced Semiconductor Engineering Taiwan (ASET)
Package Qualification Report #s 011003, 120301, 120612 (Note 1)

I. DECLARATION OF PACKAGED UNITS

A. BANNED SUBSTANCES

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS are listed in section 1A. Materials from this list may be contained or intentionally added to this product, as it is not considered Pb-Free or RoHS compliant.

Substances / Compounds	Weight by mg	PPM	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	As per MSDS
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	20,800	
Mercury and Mercury Compounds	0	< 5.0	
Polybrominated Biphenyls (PBB)	0	< 5.0	
Polybrominated Diphenylethers (PBDE)	0	< 5.0	
Asbestos	0	0	
Azo colorants	0	0	
Ozone Depleting Substances	0	0	
Polychlorinated Biphenyls (PCBs)	0	0	
Polychlorinated Napthalenes	0	0	
Radioactive Substances	0	0	
Shortchain Chlorinated Paraffins	0	0	
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	0	0	
Tributyl Tin Oxide (TBTO)	0	0	
Formaldehyde	0	0	

Note 1: Qualification reports are available at www.cypress.com. Access them by doing a Search on the Report #.

Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered “non-existent in the product” or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

B1. MATERIAL COMPOSITION (Note 3)
Using Gold wire material

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Substrate	Base Material	SiO2	60676-86-0	2.6202	11.0000%	25,940	2.5940%
		Acrylic	29690-82-2	2.3796	9.9900%	23,558	2.3558%
		Epoxy	68541-56-0	1.9104	8.0200%	18,913	1.8913%
		Bisphenol	13676-54-5	3.5778	15.0200%	35,420	3.5420%
		Triazol	25722-66-1	4.1709	17.5100%	41,292	4.1292%
		Cu	7440-50-8	8.6705	36.4000%	85,838	8.5838%
		Ni	7440-02-0	0.3501	1.4700%	3,466	0.3467%
		Au	7440-57-5	0.1310	0.5500%	1,297	0.1297%
		Br	-----	0.0095	0.0400%	94	0.0094%
Solder Ball	External Plating	Sn	7440-31-5	3.5847	63.0000%	35,489	3.5489%
		Pb	7439-92-1	2.1053	37.0000%	20,842	2.0842%
Die Attach	Adhesive	Fused Silica	60676-86-0	10.3302	54.0000%	102,269	10.2269%
		Diester	-----	5.2608	27.5000%	52,081	5.2081%
		Epoxy Resin	-----	1.0521	5.5000%	10,416	1.0416%
		Functionalized esters	-----	1.9130	10.0000%	18,939	1.8939%
		Polymeric Resin	-----	0.5739	3.0000%	5,682	0.5682%
Die	Circuit	Si	7440-21-3	10.3300	100.0000%	102,267	10.2267%
Wire	Interconnect	Au	7440-57-5	1.6000	100.0000%	15,840	1.5840%
Mold Compound	Encapsulation	Silica Fused	60676-86-0	35.9916	89.0000%	356,317	35.6317%
		Epoxy Resin	-----	2.2242	5.5000%	22,020	2.2020%
		Phenolic Resin	-----	2.2242	5.5000%	22,020	2.2020%

Package Weight (mg): **101.0100**

% Total: **100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**B2. MATERIAL COMPOSITION (Note 3)
Using Copper-Palladium wire material**

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Substrate	Base Material	SiO2	60676-86-0	2.6202	11.000%	26,161	2.6161%
		Acrylic	29690-82-2	2.3796	9.990%	23,759	2.3759%
		Epoxy	68541-56-0	1.9104	8.020%	19,074	1.9074%
		Bisphenol	13676-54-5	3.5778	15.020%	35,722	3.5722%
		Triazol	25722-66-1	4.1709	17.510%	41,644	4.1644%
		Cu	7440-50-8	8.6705	36.400%	86,570	8.6570%
		Ni	7440-02-0	0.3501	1.470%	3,497	0.3497%
		Au	7440-57-5	0.1310	0.550%	1,308	0.1308%
		Br	-----	0.0095	0.040%	95	0.0095%
Solder Ball	External Plating	Sn	7440-31-5	3.5847	63.000%	35,791	3.5791%
		Pb	7439-92-1	2.1053	37.000%	21,020	2.1020%
Die Attach	Adhesive	Fused Silica	60676-86-0	10.3302	54.000%	103,141	10.3141%
		Bismaleimide monomer	-----	5.2608	27.500%	52,526	5.2526%
		Epoxy Resin	-----	1.0521	5.500%	10,505	1.0505%
		Acrylate monomer	-----	1.9130	10.000%	19,100	1.9100%
		Acrylic Resin	-----	0.5739	3.000%	5,730	0.5730%
Die	Circuit	Si	7440-21-3	10.3300	100.000%	103,139	10.3139%
Wire	Interconnect	Cu	7440-50-8	0.7386	98.9948%	7,374	0.7374%
		Pd	7440-05-3	0.0075	1.0052%	75	0.0075%
Mold Compound	Encapsulation	Silica Fused	60676-86-0	35.8448	88.6370%	357,889	35.7889%
		Epoxy Resin	-----	2.2242	5.500%	22,207	2.2207%
		Carbon black	1333-86-4	0.1468	0.3630%	1,466	0.1466%
		Phenolic Resin	-----	2.2242	5.500%	22,207	2.2207%

Package Weight (mg): **100.1561**

% Total: **100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

II. DECLARATION OF PACKAGING / INDIRECT MATERIALS

Type	Material	Lead PPM	Cadmium PPM	Cr VI PPM	Mercury PPM	PBB PPM	PBDE PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 2.0	< 2.0	< 2.0	< 2.0	< 50.00	< 45.00	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	< 50.00	< 45.00	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	< 5.0	< 10.0	<50.0	<45.0	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	< 0.0005	< 0.0005	CoA-TRAY-R
Others	Moisture Barrier Bag	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	CoA-MBBG -R

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

ASSEMBLY Site 2: PT UNISEM Batam
Package Qualification Report # 072910 (Note 1)

I. DECLARATION OF PACKAGED UNITS

A. BANNED SUBSTANCES

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS. Listed in the table below are materials that are neither contained nor intentionally added to this product.

Substances / Compounds	Weight by mg	PPM	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	As per MSDS
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	25,044	
Mercury and Mercury Compounds	0	< 5.0	
Polybrominated Biphenyls (PBB)	0	< 5.0	
Polybrominated Diphenylethers (PBDE)	0	< 5.0	
Asbestos	0	0	
Azo colorants	0	0	
Ozone Depleting Substances	0	0	
Polychlorinated Biphenyls (PCBs)	0	0	
Polychlorinated Napthalenes	0	0	
Radioactive Substances	0	0	
Shortchain Chlorinated Paraffins	0	0	
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	0	0	
Tributyl Tin Oxide (TBTO)	0	0	
Formaldehyde	0	0	

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Note 2: Report available from Cypress Sales Offices or Distributors.

Note 3: Materials/substances not declared in Section I-A and I-B of this document are considered "non-existent in the product" or a natural impurity. In order to report exactly 100% material composition, some numbers were rounded to the nearest 0.01 percent. Cypress Semiconductor PMDD's are calculated using MSDS, Material Analysis Reports and Cypress Assembly site information.

Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

B. MATERIAL COMPOSITION (Note 3)

Material	Purpose of Use	Substance Composition		CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Substrate	Base Material	Plating 1	Au, metal & alloy	7440-57-5	0.1390	0.5200%	1,808	0.1808%
			Ni, metal & alloy	7440-02-0	0.6418	2.4000%	8,343	0.8343%
		Plating 2 AUS 308	Cu, metal & alloy	7440-50-8	5.5887	20.9000%	72,655	7.2655%
			Other acrylic / epoxy resin	-----	1.4172	5.3000%	18,425	1.8425%
			Silica, crystalline – quartz (SiO ₂)	14808-60-7	0.9092	3.4000%	11,820	1.1820%
			Copper Phthalocyanine Green	1328-53-6	0.0107	0.0400%	139	0.0139%
			1-Cyanoguanidine	461-58-5	0.0267	0.1000%	348	0.0348%
		HL832 NX	BT Resin	13676-54-5/ 25722-66-1	7.9231	29.6300%	103,004	10.3004%
			Fibrous-glass-wool	65997-17-3	10.0836	37.7100%	131,093	13.1093%
Solder Ball	External Plating	Sn		7440-31-5	3.2800	63.0000%	42,672	4.2672%
		Pb		7439-92-1	1.9300	37.0000%	25,061	2.5061%
Epoxy	Adhesive	Bismaleimide		Trade secret	0.2000	60.0000%	2,496	0.2496%
		Silicon Resin		Trade secret	0.0800	25.0000%	1,040	0.1040%
		Epoxy Resin		9003-36-5%	0.0300	10.0000%	416	0.0416%
		Diluent		Trade secret	0.0100	4.0000%	166	0.0166%
		Carbon Black		1333-86-4%	0.0000	0.5000%	21	0.0021%
		Dicyandiamide		461-58-5	0.0000	0.5000%	21	0.0021%
Silicon Chip	Circuit	Si		7440-21-3	12.9000	100.0000%	167,707	16.7707%
Bond Wire, Gold Wire	Interconnect	Au		7440-57-5	1.7500	100.0000%	22,751	2.2751%
Mold Compound	Encapsulation	Fused Silica		60676-86-0	18.0000	60.0000%	234,009	23.4009%
		Solid Epoxy Resin		-----	3.0000	10.0000%	39,001	3.9002%
		Phenol Resin		-----	3.0000	10.0000%	39,001	3.9002%
		Carbon Black		1333-86-4	0.3000	1.0000%	3,900	0.3900%
		Crystalline Silica		14808-60-7	1.5000	5.0000%	19,501	1.9501%
		Metal Hydro Oxide		-----	4.2000	14.0000%	54,602	5.4602%

Package Weight (mg): 76.9200

% Total: 100.0000

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

II. DECLARATION OF PACKAGING INDIRECT MATERIALS

Type	Material	Lead PPM	Cadmium PPM	Cr VI PPM	Mercury PPM	PBB PPM	PBDE PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 2.0	< 2.0	< 2.0	< 2.0	< 50.00	< 45.00	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	< 50.00	< 45.00	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	< 5.0	< 10.0	<50.0	<45.0	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	< 0.0005	< 0.0005	CoA-TRAY-R
Others	Moisture Barrier Bag	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	CoA-MBBG -R

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

**ASSEMBLY Site 3: Cypress Bangkok
Package Qualification Report # 152202 (Note 1)**

I. DECLARATION OF PACKAGED UNITS

A. BANNED SUBSTANCES

Materials from Level A of the EIA/JIG/JGPSSI/EICTA Material Composition Declaration Guide and EU RoHS. Listed in the table below are materials that are neither contained nor intentionally added to this product.

Substances / Compounds	Weight by mg	PPM	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	As per MSDS
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	25,044	
Mercury and Mercury Compounds	0	< 5.0	
Polybrominated Biphenyls (PBB)	0	< 5.0	
Polybrominated Diphenylethers (PBDE)	0	< 5.0	
Asbestos	0	0	
Azo colorants	0	0	
Ozone Depleting Substances	0	0	
Polychlorinated Biphenyls (PCBs)	0	0	
Polychlorinated Napthalenes	0	0	
Radioactive Substances	0	0	
Shortchain Chlorinated Paraffins	0	0	
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	0	0	
Tributyl Tin Oxide (TBTO)	0	0	
Formaldehyde	0	0	

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

MATERIAL COMPOSITION (Note 3)

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
Substrate	Base Material	SiO2 Glass Cloth	65997-17-3	9.7308	33.8316%	138,363	13.8363%
		Aluminum Hydroxide	21645-51-2	4.2682	14.8393%	60,689	6.0689%
		Epoxy resin	9003-36-5	5.5040	19.1361%	78,262	7.8262%
		Cu	7440-50-8	8.9457	31.1019%	127,199	12.7199%
		Ni	7440-02-0	0.2777	0.9654%	3,948	0.3948%
		Au	7440-57-5	0.0361	0.1256%	514	0.0514%
Solder Ball	External Plating	Sn	7440-31-5	3.1311	63.0000%	44,521	4.4521%
		Pb	7439-92-1	1.8389	37.0000%	26,148	2.6148%
Die Attach	Adhesive	Silica	Trade Secret	0.0106	4.0000%	150	0.0150%
		Organic filler	Trade Secret	0.0528	20.0000%	751	0.0751%
		Acrylic resin	Trade Secret	0.1189	45.0000%	1,690	0.1690%
		Diluent	Trade Secret	0.0660	25.0000%	939	0.0939%
		Elastomer	Trade Secret	0.0132	5.0000%	188	0.0188%
		Organic peroxide	Trade Secret	0.0026	1.0000%	38	0.0038%
Die	Circuit	Si	7440-21-3	6.0717	100.0000%	86,334	8.6334%
Wire	Interconnect	Cu	7440-50-8	0.2244	98.3000%	3,192	0.3192%
		Pd	7440-05-3	0.0039	1.7000%	55	0.0055%
Mold Compound	Encapsulation	Silica (fused)	60676-86-0	25.5267	85.0000%	362,966	36.2966%
		Carbon Black	1333-86-4	0.0751	0.2500%	1,068	0.1068%
		Epoxy resin	Trade secret	4.1594	13.8500%	59,142	5.9142%
		Phosphoric organic catalyst	Trade secret	0.0901	0.3000%	1,281	0.1281%
		Metal Oxides	Trade secret	0.1802	0.6000%	2,562	0.2562%

Package Weight (mg): **70.3281**

% Total: **100.0000**

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

II. DECLARATION OF PACKAGING INDIRECT MATERIALS

Type	Material	Lead PPM	Cadmium PPM	Cr VI PPM	Mercury PPM	PBB PPM	PBDE PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 2.0	< 2.0	< 2.0	< 2.0	< 50.00	< 45.00	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	< 50.00	< 45.00	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	< 5.0	< 10.0	<50.0	<45.0	CoA-PLRL-R
Tray	Tray	< 2.0	< 2.0	< 2.0	< 2.0	< 0.0005	< 0.0005	CoA-TRAY-R
Others	Moisture Barrier Bag	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	CoA-MBBG -R

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.

Document History Page

Document Title: 48-VFBGA (6x8 mm) Non Pb-Free Package Material Declaration Datasheet
Document Number: 001-05125

Rev.	ECN No.	Orig. of Change	Description of Change
**	400641	GFJ	New Specification
*A	1472244	VFR/HLR	Added PMDD for site 2 – AIT Indonesia Added % weight of substance per Homogenous Material and % weight of substance per package on the Material Composition for Assembly Site 1. Completed the RoHS Substances namely; Lead Cadmium, Mercury, Chromium VI, PBB and PBDE on Declaration of Packaging Indirect Materials table for Assembly Site 1.
*B	2714670	JARG	Change CAS Number for Pb in Material Composition Table for Site 2
*C	3083879	JARG	Change CAS Number for Gold (Au) on Material Composition Table for Assembly Site 1.
*D	3445871	JARG	Updated Material Composition Tables for Assembly Sites 1 and 2 to reflect 4 decimal places on values.
*E	3605764	UDR	Added B2 on Site 1 – ASEKH (G) Copper wire material Qualification. Reference QTP # 120301 and 120612.
*F	4031149	YUM	Added assembly site name in the Assembly heading in site 1 and 2. Removed entire Tube row in the Indirect Materials section.
*G	4618177	MRB	No change
*H	4781501	CS	Added Site 3 PMDD for Cypress Bangkok per QTP#152202.

Distribution: WEB

Posting: None

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Note 4: Actual testing performed on package family basis. Engineering calculations were applied to derive individual package data.