

PACKAGE MATERIAL DECLARATION DATASHEET

Cypress Package Code	SZ	Body Size (mil/mm)	300 mils
Package Weight – Site 1	B1: 437.0084 mg B2: 441.6503 mg B3: 443.9196 mg	Package Weight – Site 2	B1: 432.4737mg
***Package Weight – Site 3	B1: 444.4001 mg		

SUMMARY

The 16L-SOIC Pb-Free package is compliant to RoHS. Cypress Ordering Part Numbers containing an "X" (e.g. CY7C1328G-133AXI, CY2308SXC-1HT) meet the Directive 2002/95/EC (RoHS) requirement.

ASSEMBLY Site 1: Amkor Technology Philippines (P1/P2) Package Qualification Report # 044301, 130703, 124706 (See 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	РРМ	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	
Hexavalent Chromium and its Compounds	0	< 5.0	CoA-SZ16-
Lead and Lead Compounds	0	< 5.0	Amkor
Mercury and Mercury Compounds	0	< 5.0	Philippines
Polybrominated Biphenyls (PBB)	0	< 5.0	(P1/P2)
Polybrominated Diphenylethers (PBDE)	0	< 5.0	
Asbestos	0	0	As per MSDS
Azo colorants	0	0	As per MSDS
Ozone Depleting Substances	0	0	As per MSDS
Polychlorinated Biphenyls (PCBs)	0	0	As per MSDS
Polychlorinated Napthalenes	0	0	As per MSDS
Radioactive Substances	0	0	As per MSDS
Shortchain Chlorinated Paraffins	0	0	As per MSDS
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	0	0	As per MSDS
Tributyl Tin Oxide (TBTO)	0	0	As per MSDS
Formaldehyde	0	0	As per MSDS

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

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



B1. MATERIAL COMPOSITION (Note 3)

Using Gold Wire and Pure Sn Lead Finish

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	PPM	% weight of substance per package
		Cu	7440-50-8	112.4544	96.7100%	257,328	25.7328%
		Fe	7439-89-6	2.7210	2.3400%	6,226	0.6226%
Leadframe	Base Material	Р	7723-14-0	0.0349	0.0300%	80	0.0080%
		Zn	7440-66-6	0.1395	0.1200%	319	0.0319%
		Ag	7440-22-4	0.9186	0.7900%	2,102	0.2102%
Lead Finish	External Plating	Sn	7440-31-5	2.9600	100.0000%	6,773	0.6773%
		Resin	Proprietary	0.4000	21.0500%	915	0.0915%
		Ag	7440-22-4	1.3199	69.4700%	3,020	0.3020%
Die Attach	Adhesive	Metal oxide	Proprietary	0.0600	3.1600%	137	0.0137%
Die Allach	Adhesive	Amine	Proprietary	0.0600	3.1600%	137	0.0137%
		Gamma Butyrolactone	96-48-0	0.0600	3.1600%	137	0.0137%
Die	Circuit	Si	7440-21-3	7.9400	100.0000%	18,169	1.8169%
Wire	Interconnect	Au	7440-57-5	0.3900	100.0000%	892	0.0892%
		Multi-aromatic Resin	Proprietary	23.0663	7.5000%	52,782	5.2782%
Mold		SiO ₂ Fused	60676-86-0	264.4930	86.0000%	605,236	60.5236%
Mold Compound	Encapsulation	Carbon Black	1333-86-4	1.5378	0.5000%	3,519	0.3519%
		Epoxy Cresol Novolac	29690-82-2	6.1510	2.0000%	14,075	1.4075%
		Phenol Resin	Proprietary	12.3020	4.0000%	28,150	2.8150%

Package Weight (mg): 437.0084

% Total: 100.0000

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

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



B2. MATERIAL COMPOSITION (Note 3)

Using Gold Wire and NiPdAu Lead Finish

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	РРМ	% weight of substance per package
		Cu	7440-50-8	122.0670	97.4263	276,388	27.6388
Leadframe	Base Material	Fe	7439-89-6	3.0069	2.3999	6,808	0.6808
Leauname	Dase material	Zn	7440-66-6	0.1676	0.1338	380	0.0380
		Р	7723-14-0	0.0501	0.0400	113	0.0113
	External	Ni	7440-02-0	1.7808	97.4339	4,032	0.4032
Lead Finish	Lead Finish External Plating	Pd	7440-05-3	0.0378	2.0682	86	0.0086
	Flating	Au	7440-57-5	0.0091	0.4979	21	0.0021
		Epoxy Resin A	Proprietary	0.1356	7.0000	307	0.0307
		Epoxy Resin B	Proprietary	0.0775	4.0000	175	0.0175
		Ag	7440-22-4	1.4915	77.0000	3,377	0.3377
	Adhesive	Lactone	Proprietary	0.0775	4.0000	175	0.0175
Die Attach		Polyoxypropyle nediamine	Proprietary	0.0775	4.0000	175	0.0175
		2,6-Diglycidyl phenyl allyl ether oligomer	Proprietary	0.0775	4.0000	175	0.0175
Die	Circuit	Silicon	7440-21-3	10.6722	100.0000	24,167	2.4167
Wire	Interconnect	Au	7440-57-5	0.2506	100.0000	567	0.0567
		Multi-aromatic Resin	Proprietary	22.6253	7.5000	51,229	5.1229
Mold		SiO2 Filler	60676-86-0	259.4372	86.0000	587,427	58.7427
Mold	Encapsulation	Carbon Black	1333-86-4	1.5084	0.5000	3,415	0.3415
Compound		Epoxy Cresol Novolac	29690-82-2	6.0334	2.0000	13,661	1.3661
		Phenol Resin	Proprietary	12.0668	4.0000	27,322	2.7322

Package Weight (mg): 441.6503

% Total: 100.0000

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.



B3. MATERIAL COMPOSITION (Note 3)

Using Copper Wire and Pure Sn Lead Finish

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	РРМ	% weight of substance per package
		Cu	7440-50-8	122.0670	96.4445	274,975	27.4975
		Fe	7439-89-6	3.0069	2.3757	6,773	0.6773
Leadframe	Base Material	Zn	7440-66-6	0.1676	0.1324	378	0.0378
		Р	7723-14-0	0.0501	0.0396	113	0.0113
		Ag	7440-22-4	1.2755	1.0077	2,873	0.2873
Lead Finish	External Plating	Sn	7440-31-5	2.9560	100.0000	6,659	0.6659
		Epoxy Resin A	Proprietary	0.1356	7.0000	305	0.0305
		Epoxy Resin B	Proprietary	0.0775	4.0000	175	0.0175
		Ag	7440-22-4	1.4915	77.0000	3,360	0.3360
		Lactone	Proprietary	0.0775	4.0000	175	0.0175
Die Attach	Adhesive	Polyoxypropyle nediamine	Proprietary	0.0775	4.0000	175	0.0175
		2,6-Diglycidyl phenyl allyl ether oligomer	Proprietary	0.0775	4.0000	175	0.0175
Die	Circuit	Silicon	7440-21-3	10.6722	100.0000	24,040	2.4040
Wire	Interconnect	Cu	7440-50-8	0.1161	100.0000	261	0.0261
		Multi-aromatic Resin	Proprietary	22.6253	7.5000	50,967	5.0967
Mold		SiO2 Filler	60676-86-0	259.4372	86.0000	584,424	58.4424
	Encapsulation	Carbon Black	1333-86-4	1.5084	0.5000	3,398	0.3398
Compound		Epoxy Cresol Novolac	29690-82-2	6.0334	2.0000	13,591	1.3591
		Phenol Resin	Proprietary	12.0668	4.0000	27,183	2.7183

Package Weight (mg): 443.9196

% Total: 100.0000

II. DECLARATION OF PACKAGING / INDIRECT MATERIALS

Туре	Material	Lead PPM	Cadmium PPM	Cr VI PPM	Mercury PPM	PBB PPM	PBDE PPM	Analysis Report (Note2)
	Cover tape	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-COVT-R
Tape & Reel	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-CART-R
	Plastic Reel	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-PLRL-R
Tube	Plastic Tube	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	CoA-PLTB-R
Tube	End Plug	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	CoA-EPLG-R
	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –R
	Moisture Barrier bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-MBBG-R
	Protective Band	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-PROB-R
Others	Shipping and Inner Box	< 10.0	< 4.0	< 4.0	< 5.0			CoA-ABOX-R
	Dessicant	< 10.0	< 2.0	< 2.0	< 1.0	< 3.0	< 3.0	CoA-DESS-R
	Bubble Pack	< 2.0	< 2.0	< 2.0	< 2.0	< 100.0	< 90.0	CoA-BUBP-R

Note 1: Qualification reports are available at <u>www.cypress.com</u>. 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.



ASSEMBLY Site 2: ASSEMBLY Site 4: UTAC Thailand Limited (UTL) Package Qualification Report # 151502, (See 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	РРМ	Analysis Report (Note 2)
Cadmium and Cadmium Compounds	0	< 5.0	
Hexavalent Chromium and its Compounds	0	< 5.0	0-0.0740
Lead and Lead Compounds	0	< 5.0	CoA-SZ16- UTAC
Mercury and Mercury Compounds	0	< 5.0	UTAC
Polybrominated Biphenyls (PBB)	0	< 5.0	
Polybrominated Diphenylethers (PBDE)	0	< 5.0	
Asbestos	0	0	As per MSDS
Azo colorants	0	0	As per MSDS
Ozone Depleting Substances	0	0	As per MSDS
Polychlorinated Biphenyls (PCBs)	0	0	As per MSDS
Polychlorinated Napthalenes	0	0	As per MSDS
Radioactive Substances	0	0	As per MSDS
Shortchain Chlorinated Paraffins	0	0	As per MSDS
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	0	0	As per MSDS
Tributyl Tin Oxide (TBTO)	0	0	As per MSDS
Formaldehyde	0	0	As per MSDS

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

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



16L – SOIC 300 mils Pb-Free Package

B1. MATERIAL COMPOSITION (Note 3)

Using CuPd Wire, G605 Mold compound, 8200T D/A and Pure Sn Lead Finish

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% weight of substance per Homogenous material	РРМ	% weight of substance per package
		Cu	7440-50-8	183.1200	91.3300	423423	42.3400
		Fe	7439-89-6	4.3800	2.1900	10137	1.0100
Leadframe	Base Material	Zn	7440-66-6	0.2300	0.1100	522	0.0500
		Р	7723-14-0	0.1500	0.0700	338	0.0300
Lead External	Sn	7440-22-4	12.6300	6.3000	29208	2.9200	
Lead Finish	External Plating	Sn	7440-22-4	17.4166	100.0000	40272	4.0300
		exo-1,7,7- trimethylbicyclo(2.2,1)hept2- yl methacrylate	7534-94-3	0.8500	20.0000	1975	0.2000
Die Attach	Adhesive	1,1-(1,3 phenylene)bis-1H- pyrrole-2.5-dione	3006-93-7	0.2800	6.5000	642	0.0600
		Ag	7440-22-4	3.1200	73.0000	7211	0.7200
		Acrylic acid,2- [methyl(1,1,2,2,3,3,4,4,4- nonafluorobuty)	1017237-78-3	0.0200	0.5000	49	0.0000
Die	Circuit	Silicon	7440-21-3	4.5871	100.0000	10607	1.0600
Wire	Interconnect	Cu	7440-50-8	2.2500	98.2500	5206	0.5200
vviie	Interconnect	Pd	7440-05-3	0.0400	1.7500	93	0.0100
		Silica Filler	60676-86-0	172.8900	85.0000	399770	39.9800
		Epoxy Resin	Trade Secret	17.2900	8.5000	39977	4.0000
Mold Compound	Encapsulation	Carbon Black	1333-86-4	0.2000	0.1000	470	0.0500
Compound		Phenol Resin A	Trade Secret	6.5100	3.2000	15050	1.5100
		Phenol Resin B	Trade Secret	6.5100	3.2000	15050	1.5100

Package Weight (mg): 432.4737

% Total: 100.0000

I. DECLARATION OF PACKAGING INDIRECT MATERIALS

Туре	Material	Lead PPM	Cadmium PPM	Cr VI PPM	Mercury PPM	PBB PPM	PBDE PPM	Analysis Report (Note2)
Tube	Plastic Tube	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	CoA-PLTB-R
Tube	End Plug	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	CoA-EPLG-R
Tape and Reel	Carrier Tape	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	CoA-CART-R
	Moisture Barrier Bag	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	CoA-MBBG-R
	Dessicant	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	CoA-DESS-R
Others	HIC	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	CoA-HIC-R
Others	Bubble Pack	<5.0	<5.0	<5.0	<5.0	<10.0	<10.0	CoA-BUBB-R
	Carton Label	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	CoA-CRTN-R
	Inner Label	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	CoA-LBL-R
	Shielding Bag	<5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	CoA-SBAG-R

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.



***ASSEMBLY Site 3: Cypress Manufacturing Limited (CML) Package Qualification Report # 154002

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	РРМ	Analysis Report Link/s
Cadmium and Cadmium Compounds	0	< 5.0	
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	< 5.0	CoA-SZ16-
Mercury and Mercury Compounds	0	< 5.0	CML
Polybrominated Biphenyls (PBB)	0	< 5.0	
Polybrominated Diphenylethers (PBDE)	0	< 5.0	
Asbestos	0	0	As per MSDS
Azo colorants	0	0	As per MSDS
Ozone Depleting Substances	0	0	As per MSDS
Polychlorinated Biphenyls (PCBs)	0	0	As per MSDS
Polychlorinated Napthalenes	0	0	As per MSDS
Radioactive Substances	0	0	As per MSDS
Shortchain Chlorinated Paraffins	0	0	As per MSDS
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	0	0	As per MSDS
Tributyl Tin Oxide (TBTO)	0	0	As per MSDS
Formaldehyde	0	0	As per MSDS

B1. NiPdAu,	Green Molding	Compound,	Copper-Palladium (Cu-Pd)
		,	

Material	Purpose of Use	Substance Composition	CAS Number	Weight by mg	% Weight of Substance per Homogeneous Material	РРМ	% Weight of Substance per package
		Cu	7440-50-8	128.4247	96.0544%	288,985	28.8985%
Lead frame	Base Material	Ni	7440-02-0	4.8096	3.5973%	10,823	1.0823%
Leau Itallie	Dase Material	Si	7440-21-3	0.3857	0.2885%	868	0.0868%
		Mg	7439-95-4	0.0798	0.0597%	180	0.0180%
	Esteral	Nickel	7440-02-0	1.0533	99.8938%	2,370	0.2370%
Lead Finish Plating	External	Palladium	7440-05-3	0.0008	0.0664%	2	0.0002%
	Flating	Gold	7440-57-5	0.0006	0.0398%	1	0.0001%
Die Attach	Adhesive	Silver	7440-22-4	0.2842	79.6882%	639	0.0639%

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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.



16L - SOIC 300 mils **Pb-Free Package**

PERFORM							
		Carbocyclic acrylate	Trade Secret	0.0429	12.0425%	97	0.0097%
		Bismaleimide Resin	Trade Secret	0.0166	4.6543%	37	0.0037%
		Acrylate	Trade Secret	0.0109	3.0502%	24	0.0024%
		Additive	Trade Secret	0.0020	0.5648%	5	0.0005%
Die	Circuit	Silicon	7440-21-3	6.2900	100.0000%	14,1534	1.4154%
Wire	Interconnect	Copper	7440-50-8	0.0134	99.2592%	30	0.0030%
		Palladium	7440-05-3	0.0001	0.7408%	0.02	0.000002%
Mold Compound	Encapsulation	Silica - SiO2	60676-86-0	273.8677	90.3897%	616,264	61.6264%
		Epoxy Resin	Trade Secret	16.5212	5.4528%	37,176	3.7176%
		Phenol Resin	Trade Secret	12.5966	4.1575%	28,345	2.8345%

Package Weight (mg):

444.4001

100.0000 %Total:

%

II. DECLARATION OF PACKAGING / INDIRECT MATERIALS

Туре	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	<5.0	<5.0	CoA-COVT-R
	Carrier tape	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-CART-R
	Plastic Reel	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-PLRL-R
Tube	Plastic Tube	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	CoA-PLTB-R
	End Plug	< 5.0	< 5.0	< 5.0	< 5.0	< 1.0	< 1.0	CoA-EPLG-R
Others	Shielding bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-SBAG –R
	Moisture Barrier bag	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-MBBG-R
	Protective Band	< 2.0	< 2.0	< 2.0	< 2.0	<5.0	<5.0	CoA-PROB-R
	Shipping and Inner Box	< 10.0	< 4.0	< 4.0	< 5.0			CoA-ABOX-R
	Dessicant	< 10.0	< 2.0	< 2.0	< 1.0	< 3.0	< 3.0	CoA-DESS-R
	Bubble Pack	< 2.0	< 2.0	< 2.0	< 2.0	< 100.0	< 90.0	CoA-BUBP-R

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



Document Title:

Document History Page

16L - SOIC 300MILS PB-FREE PACKAGE MATERIAL DECLARATION DATASHEET 001-05013 **Document Number:**

Rev.	ECN No.	Orig. of Change	Description of Change
**	410529	YXP	New specification.
*A	2264970	HLR DCon	Updated Cypress Logo Added % weight of substance per Homogenous Material and % weight of substance per package on the Material Composition. Completed the RoHS Substances namely; Lead Cadmium, Mercury, Chromium VI, PBB and PBDE on Declaration of Packaging Indirect Materials table Replaced CML with WEB in distribution list.
*B	3242150	HLR	Removed Tray Based on Indirect Materials Declaration table.
*C	3600532	HLR	Updated Assembly Site 1 to reflect 4 decimal places on values of material composition table.
*D	4009716	YUM	Added assembly site name in the assembly heading. Changed Assembly code to assembly site name. Added Assy Site 2 B2 – Material Composition with Au wire
			and NiPdAu Lead finish, reference QTP # 130703 and B3 – Material Composition with Cu wire and Pure Sn Lead finish, reference QTP # 124706.
*E	4158625	HLR	Corrected the % weight for homogenous materials for NiPdAu material for Assembly Site 1.B2 Material Composition.
*F	4764230	HLR	Sunset Due – No Change.
*G	4961657	PRCH	Added UTL for Site 2 CuPd wire G605 mold compound and Pure Sn plating Removed "Distribution: WEB" and "Posting: NONE" from the document history page.
*H	5012224	RODP	Added CML as Site 3 B1 Material composition with NiPdAu, Green Molding Compound, Copper-Palladium (Cu-Pd), ref. QTP # 154002

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.