PACKAGE MATERIAL DECLARATION DATASHEET (PMDD)

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Cypress Package Code	ZZ	Body Size (mil/mm)	4.4 mm
Package Weight – Site 1	50 mg	Package Weight – Site 2	51 mg
Package weight – Site 3	62 mg		

SUMMARY

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The 16L-TSSOP package is qualified at three assembly sites. Packages from different assembly sites are likely to have different materials composition. However, Cypress guarantees that product ordered with a part number containing an "X" (e.g. CY7C1328G-133A**X**I, CY2308S**X**C-1HT) meets all requirement of the EU RoHS directive.

ASSEMBLY Site 1 – Package Qualification Report # 015107 (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	CoA-ZZ16-R
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	< 5.0	
Mercury and Mercury Compounds	0	< 5.0	
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 www.cypress.com. Access them by doing a Search on the Report #.
Note 2: Report available from Cypress Sales Offices or Distributors.
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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	PPM	%
Leadframe	Base Material	Cu	7440-50-8	23.60	472,099	47.21%
		Si	7440-21-3	0.30	6,072	0.61%
		Mg	7439-95-4	0.08	1,518	0.15%
		Ni	7440-02-0	1.01	20,240	2.02%
		Fe	7439-89-6	0.05	1,012	0.10%
		Zn	7440-66-6	0.25	5,060	0.51%
Lead Finish	External Plating	Ni	7440-02-0	0.19	3,749	0.37%
		Pd	7440-05-3	0.01	190	0.02%
		Au	7440-57-5	0.00	61	0.01%
Die Attach	Adhesive	Ag	7440-22-4	0.17	3,395	0.34%
		Proprietary bismaleimide	------------------	0.02	382	0.04%
		Proprietary polymer	------------------	0.01	212	0.02%
		Methacrylate	------------------	0.00	85	0.01%
		Acrylate ester		0.00	85	0.01%
		Organic peroxide	------------------	0.00	85	0.01%
Die	Circuit	Si	7440-21-3	2.97	59,405	5.94%
Wire	Interconnect	Au	7440-57-5	0.61	12,107	1.21%
Mold Compound	Encapsulation	Epoxy resin	85954-11-6	1.04	20,712	2.07%
		Phenol resin	26834-02-6	1.04	20,712	2.07%
		Brominated epoxy resin	68541-56-0	0.21	4,142	0.41%
		Antimony trioxide	1309-64-4	0.10	2,071	0.21%
		Silica	60676-86-0	18.12	362,463	36.25%
		Others	------------------	0.21	4,142	0.41%

Package Weight (mg): 50 % Total: 100

II. DECLARATION OF PACKAGING INDIRECT MATERIALS

Type	Material	Cadmium PPM	Mercury PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 5.0	< 5.0	CoA-COVT-R
	Carrier tape	< 5.0	< 5.0	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	CoA-PLRL-R
Tray	Tray	N/A	N/A	N/A
Tube	Plastic Tube	< 5.0	< 5.0	CoA-PLTB –R
	End Plug	< 5.0	< 5.0	CoA-EPLG –R
	End Pin	< 5.0	TBD	CoA-EPIN –R
Others	Moisture Barrier bag	N/A	N/A	N/A
	Shielding bag	< 5.0	< 5.0	CoA-SBAG –R
	Protective Band	< 5.0	< 5.0	CoA-PROB-R
	Shipping and inner/ pizza box	< 5.0	< 5.0	CoA-ABOX-R
	Desiccant	< 5.0	< 5.0	CoA-DESS-R
	Bubble Pack	< 5.0	< 5.0	CoA-BUBP-R

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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.

ASSEMBLY Site 2 – Package Qualification Report # 024701 (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	CoA-SP28-T
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	< 5.0	
Mercury and Mercury Compounds	0	< 5.0	
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 www.cypress.com. Access them by doing a Search on the Report #.
Note 2: Report available from Cypress Sales Offices or Distributors.
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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	PPM	%
Leadframe	Base Material	Cu	7440-50-8	14.87	292,632	29.26%
		Si	7440-21-3	0.19	3,755	0.38%
		Mg	7439-95-4	0.05	939	0.09%
		Ag	7440-22-4	0.06	1,252	0.13%
		Ni	7440-02-0	0.67	13,143	1.31%
Lead Finish	External Plating	Sn	7440-31-5	1.30	25,566	2.56%
Die Attach	Adhesive	Epoxy resin	--------------------	0.16	3,070	0.31%
		Ag	7440-22-4	0.59	11,513	1.15%
		Metal	--------------------	0.04	768	0.08%
Die	Circuit	Si	7440-21-3	1.87	36,800	3.68%
Wire	Interconnect	Au	7440-57-5	0.17	3,326	0.33%
Mold Compound	Encapsulation	Epoxy resin	85954-11-6	1.54	30,299	3.03%
		Phenol resin	26834-02-6	1.23	24,239	2.42%
		Aromatic Phosphate	--------------------	0.31	6,060	0.61%
		Carbon black	1333-86-4	0.06	1,212	0.12%
		Silica	60676-86-0	27.59	543,003	54.30%
		Antimony and its compound	7440-36-0	0.03	545	0.05%
		Bromine organic compound	--------------------	0.03	545	0.05%
		Organic Phosphorus compound (Catalyst)	--------------------	0.07	1,332	0.13%

Package Weight (mg): 51 **% Total: 100**

II. DECLARATION OF PACKAGING INDIRECT MATERIALS

Type	Material	Cadmium PPM	Mercury PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 5.0	< 5.0	CoA-COVT-T
	Carrier tape	< 5.0	< 5.0	CoA-CART- T
	Plastic Reel	< 5.0	< 5.0	CoA-PLRL- T
Tray	Tray	N/A	N/A	N/A
Tube	Plastic Tube	< 5.0	< 5.0	CoA-PLTB-T
	End Plug	< 5.0	< 5.0	CoA-EPLG-T
	End Pin	N/A	N/A	N/A
Others	Moisture Barrier bag	N/A	N/A	N/A
	Shielding bag	< 5.0	< 5.0	CoA-SBAG- T
	Protective Band	N/A	N/A	N/A
	Shipping and inner/ pizza box	< 5.0	< 5.0	CoA-ABOX-R
	Desiccant	N/A	N/A	N/A
	Bubble Pack	< 5.0	< 5.0	CoA-BUBP- T

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

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ASSEMBLY Site 3 – Package Qualification Report # 032101 (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	CoA-ZZ16-M
Hexavalent Chromium and its Compounds	0	< 5.0	
Lead and Lead Compounds	0	< 5.0	
Mercury and Mercury Compounds	0	< 5.0	
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

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Note 2: Report available from Cypress Sales Offices or Distributors.
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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	PPM	%
Leadframe	Base Material	Cu	7440-50-8	26.42	426,100	42.61%
		Ni	7440-02-0	0.82	13,300	1.33%
		Si	7440-21-3	0.18	2,900	0.29%
		Mg	7439-95-4	0.04	700	0.07%
		Ag	7440-22-4	0.64	10,400	1.04%
Lead Finish	External Plating	Sn	7440-31-5	1.57	25,300	2.53%
Die Attach	Adhesive	Resin	-------------------	0.27	4,400	0.44%
		Ag	7440-22-4	0.92	14,900	1.49%
		Metal Oxide	-------------------	0.04	600	0.06%
		Amine	-------------------	0.04	600	0.06%
		Gamma Butyrolactone	-------------------	0.04	600	0.06%
Die	Circuit	Si	7440-21-3	3.87	62,400	6.24%
Wire	Interconnect	Au	7440-57-5	0.40	6,400	0.64%
Mold Compound	Encapsulation	Filler	-------------------	22.47	362,400	36.24%
		Phenol Resin	-------------------	1.86	30,000	3.00%
		Epoxy Resin	-------------------	2.42	39,000	3.90%

Package Weight (mg): 62 **% Total: 100**

II. DECLARATION OF PACKAGING INDIRECT MATERIALS

Type	Material	Cadmium PPM	Mercury PPM	Analysis Report (Note2)
Tape & Reel	Cover tape	< 5.0	< 5.0	CoA-COVT-R
	Carrier tape	< 5.0	< 5.0	CoA-CART-R
	Plastic Reel	< 5.0	< 5.0	CoA-PLRL-R
Tray	Tray	N/A	N/A	N/A
Tube	Plastic Tube	< 5.0	< 5.0	CoA-PLTB –R CoA-PLTB –M
	End Plug	< 5.0	< 5.0	CoA-EPLG –R CoA-EPLG –M
	End Pin	< 5.0	TBD	CoA-EPIN –R
Others	Moisture Barrier bag	< 5.0	< 5.0	CoA-MBBG-R CoA-MBBG-M
	Shielding bag	< 5.0	< 5.0	CoA-SBAG –R CoA-SBAG –M
	Protective Band	< 5.0	< 5.0	CoA-PROB-R
	Shipping and inner/ pizza box	< 5.0	< 5.0	CoA-ABOX-R
	Desiccant	< 5.0	< 5.0	CoA-DESS-R
	Bubble Pack	< 5.0	< 5.0	CoA-BUBP-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: 16L-TSSOP Pb-Free PMDD
Document Number: 001-04165

Rev.	ECN No.	Orig. of Change	Description of Change
**	390637	YXP	New document.
*A	401531	GFJ	Added assembly site 3. Added Package weight and word "PMDD". Change the word from two to three in summary of qualified assembly sites. Added natural impurity in note 3 and added note 4.

Distribution: E-CML

Posting: None

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