

Material Declaration Data Sheets. AMD has created material data sheets for some of its more popular package designs. These data sheets are organized as follows:

- Surface-Mount Array Packages
 - ◆ PBGA & LFBGA, *page 2-19*
- Surface-Mount Leaded Packages
 - ◆ PLCC, *page 20-25*
 - ◆ PQFP, TQFP, *page 26-44*



Material Declaration Sheet

Package Type: 208 PBGA

Description: Semiconductor (Geode Products)

Average Weight: 1.74 grams

Contact: jim.casto@amd.com

The following materials are contained in products using this package:

Item	Component	% of component in item	Wt of Item (mg)	Wt. of component (mg)	ppm of component in package
Substrate	BT	43.00	430.52	185.13	106,302
	Cu	40.67		175.09	100,542
	Ni	2.0940		9.02	5,177
	Au	0.2270		0.98	561
	Solder Mask	14.00		60.27	34,610
Plastic	SiO2	86.70	881.93	764.63	439,061
	ECN	12.00		105.83	60,770
	Sb2O3	0.9		7.94	4,558
	Br	0.4		3.53	2,026
Chip	Si	99.4	19.33	19.21	11,031
	Al	0.6		0.12	67
Die Attach	Ag	75	1.94	1.46	836
	bismaleimide	25		0.49	279
Wires	Au	100	5.96	5.96	3,420
Solder Balls	Sn	63	401.88	253.18	145,381
	Pb	37		148.69	85,382
				1741.51	1,000,000

Notes

Component	Chemical Name
BT	Bismaleimide triazine
Solder Mask	Unknown
ECN	Epoxy cresol novalac resin
Br	Brominated flame retardant; part of cured epoxy matrix in final product.



Material Declaration Sheet

Package: PBGA, BGA 272
Description: Semiconductor

Average Weight: 2.4 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 6,000 PPM
Brominated Polymers	C2c	Brominated Polymer in Molding Compound	< 2.5%
Copper	C1k	Traces within substrate	< 7.5 wt%
Gold	C1l	Wire Bonding and Internal Plating	< 800 PPM
Nickel	C1h	Internal Plating	< 3,500 PPM
Pb (Lead)	C1f	Solder Balls	< 8.5 wt%
Silver	C1n	Die Attach	< 5,500 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Amines	< 200 PPM	Silica (Quartz)	< 2,000 PPM
BT Resin	< 1.5 wt %	Silicon	< 2.0 wt%
Carbon Black	< 2,000 PPM	SiO ₂ Filler (Fused Silica)	< 24.0 wt %
Chlorine	< 1,000 PPM	SiO ₂ Glass Mesh	< 19.0 wt %
Epoxy	< 4 wt %	Solder Mask	< 4.5 wt %
Phenol, Polymer with Formaldehyde	< 3.5 wt %	Tin	< 14.0 wt %
Silica (Christobalite)	< 2,000 PPM		

Material Declaration Sheet

Package: PBGA, LBB 324

Average Weight: 1.3 grams

Description: Semiconductor

Contact: james.casto@amd.com

Controlled Materials

- The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

- The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

- The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 7,000 PPM
Copper	C1k	Leads	< 9.5%
Gold	C1l	Wire Bonding	< 1%
Nickel	C1h	Leads	< 1.6%
Pb (Lead)	C1f	Leads	< 5.3%
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 1,300 PPM

Note:

- ¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.



Material Declaration Sheet

Package Type: 352 PBGA

Average Weight: 4.25 grams

Description: Semiconductor (Geode Products)

Contact: james.casto@amd.com

The following materials are contained in products using this package:

Item	Component	% of component in item	Wt of Item (mg)	Wt. of component (mg)	ppm of component in package
Substrate	BT	60.85	1,420.02	864.08	203,335.94
	Cu	27.77		394.37	92,802.72
	Ni	1.269		18.02	4,240.48
	Au	0.138		1.96	461.14
	Solder Mask	9.97		141.59	33,319.03
Plastic	SiO2	86.70	2,080.99	1,804.22	424,570.37
	ECN	12.00		249.72	58,764.06
	Sb2O3	0.9		18.73	4,407.30
	Br	0.4		8.32	1,958.80
Chip	Si	99.4	53.14	52.82	12,428.76
	Al	0.6		0.32	75.02
Die Attach	Ag	75	5.20	3.90	917.41
	bismaleimide	25		1.30	305.80
Wires	Au	100	10.08	10.08	2,371.53
Solder Balls	Sn	63	680.10	428.46	100,826.22
	Pb	37		251.64	59,215.40
				4,249.52	1,000,000.00

Component	Chemical Name
BT	Bismaleimide triazine
Solder Mask	Unknown
ECN	Epoxy cresol novalac resin
Br	Brominated flame retardant; part of cured epoxy matrix in final product.



Material Declaration Sheet

Package Type: 388 TEPBGA
Description: Semiconductor (Geode Products)

Average Weight: 5.37 grams
Contact: jim.casto@amd.com

The following materials are contained in products using this package:

Item	Component	% of component in item	Wt of Item (mg)	Wt. of component (mg)	ppm of component in package
Substrate	BT	25.23	2562.64	646.56	120283
	Cu	68.61		1758.23	327096
	Ni	0.515		13.20	2455
	Au	0.070		1.79	334
	Solder Mask	5.57		142.74	26555
Plastic	SiO2	86.7	1963.70	1702.52	316732
	ECN	12		235.64	43838
	Sb2O3	0.9		17.67	3288
	Br	0.4		7.85	1461
Chip	Si	99.4	83.58	83.08	15456
	Al	0.6		0.50	93
Die Attach	Ag	75	8.11	6.08	1132
	Epoxy Resin	25		2.03	377
Wires	Au	100	7.71	7.71	1435
Solder Balls	Sn	63	749.66	472.28	87862
	Pb	37		277.37	51602
				5375	1,000,000

Component	Chemical Name
BT	Bismaleimide triazine
Solder Mask	Unknown
ECN	Epoxy cresol novalac resin
Br	Brominated flame retardant; part of cured epoxy matrix in final product.

Material Declaration Sheet

Package: PBGA, LBB 324 (continued)

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Amines, Aliphatic	< 250 PPM	Other Halogenated Aromatic Compounds	< 3,500 PPM
Amines, Aromatic	< 250 PPM	Oxides and Hydroxides (except for C, Si, Fe, Al, Ti, Mn, Mg, and Ca)	< 7,000 PPM
Aromatic Compounds as Monomers	< 25 PPM	Phenol and Phenolic Compounds as Monomers	< 25 PPM
BT Resin	< 9%	Phosphorus Compounds (except for Al, Ca, Fe Phosphates)	< 1,400 PPM
Carbon Black	< 2,600 PPM	Polybrominated Aromatic Compounds	< 3,000 PPM
Chlorine	< 500 PPM	Silicon	< 2.8%
Epoxy	< 1.1%	SiO ₂ Filler	< 36%
Halogenated Aromatic Hydrocarbons	< 3,500 PPM	SiO ₂ Glass Mesh	< 12%
Organic Halogen Compounds	< 3,500 PPM	Solder Mask	< 6%
Organic Oxygen Compounds	< 5.2%	Tin	< 9%
Organic Silicon Compounds	< 7,000 PPM		



Material Declaration Sheet

Package: PBGA, LBA 399

Average Weight: 0.9 grams

Description: Semiconductor

Contact: james.castro@amd.com

Controlled Materials

- The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

- The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

- The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 5,100 PPM
Copper	C1k	Leads	< 14.0%
Gold	C1l	Wire Bonding	< 1.0%
Nickel	C1h	Leads	< 2.3%
Pb (Lead)	C1f	Leads	< 4.2%
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 1,200 PPM

Note:

- ¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Material Declaration Sheet

Package: PBGA, LBA 399 (continued)

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Amines, Aliphatic	< 200 PPM	Other Halogenated Aromatic Compounds	< 2,600 PPM
Amines, Aromatic	< 200 PPM	Oxides and Hydroxides (except for C, Si, Fe, Al, Ti, Mn, Mg, and Ca)	< 5,100 PPM
Aromatic Compounds as Monomers	< 20 PPM	Phenol and Phenolic Compounds as Monomers	< 25 PPM
BT Resin	< 15%	Phosphorus Compounds (except for Al, Ca, Fe Phosphates)	< 1,100 PPM
Carbon Black	< 2,000 PPM	Polybrominated Aromatic Compounds	< 2,100 PPM
Chlorine	< 800 PPM	Silicon	< 2.3%
Epoxy	< 7,200 PPM	SiO ₂ Filler	< 27%
Halogenated Aromatic Hydrocarbons	< 2,600 PPM	SiO ₂ Glass Mesh	< 18%
Organic Halogen Compounds	< 2,600 PPM	Solder Mask	< 4.0%
Organic Oxygen Compounds	< 3.8%	Tin	< 7.5%
Organic Silicon Compounds	< 5,500 PPM		



Material Declaration Sheet

Package: PBGA, LBA 424

Average Weight: 0.96 grams

Description: Semiconductor

Contact: james.casto@amd.com

Controlled Materials

- The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

- The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

- The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 5,500 PPM
Copper	C1k	Leads	< 18.0%
Gold	C1l	Wire Bonding	< 1.2%
Nickel	C1h	Leads	< 3.0%
Pb (Lead)	C1f	Leads	< 4.0%
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 1,600 PPM

Note:

- ¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Material Declaration Sheet

Package: PBGA, LBA 424 (continued)

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Amines, Aliphatic	< 200 PPM	Other Halogenated Aromatic Compounds	< 2,800 PPM
Amines, Aromatic	< 200 PPM	Oxides and Hydroxides (except for C, Si, Fe, Al, Ti, Mn, Mg, and Ca)	< 5,500 PPM
Aromatic Compounds as Monomers	< 20 PPM	Phenol and Phenolic Compounds as Monomers	< 20 PPM
BT Resin	< 11%	Phosphorus Compounds (except for Al, Ca, Fe Phosphates)	< 1,100 PPM
Chlorine	< 600 PPM	Polybrominated Aromatic Compounds	< 2,300 PPM
Epoxy	< 8,000 PPM	Silicon	< 3.2%
Halogenated Aromatic Hydrocarbons	< 2,800 PPM	SiO ₂ Filler	< 29%
Organic Halogen Compounds	< 2,800 PPM	SiO ₂ Glass Mesh	< 14%
Organic Oxygen Compounds	< 4.1%	Solder Mask	< 5.0%
Organic Silicon Compounds	< 5,500 PPM	Tin	< 7.0%

MATERIAL DECLARATION DATA SHEET

Package: PBGA LBA424 Average Weight: 0.52 grams
 Description: Pb-free Alchemy Device Contact: james.casto@amd.com

CONTROLLED MATERIALS

- The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

RESTRICTED MATERIALS

- The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

MATERIALS OF INTEREST

- The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Wt %	ppm	Mg
Antimony Compounds	C1a	Molding compound flame retardant	< 0.56	< 5,600	< 6.3
Bromine	C2c	Molding compound flame retardant	< 1.1	< 11,000	< 12.4
Copper	C1k	Internal circuitry	< 17.7	< 177,000	< 200
Gold	C1l	Wire bonding	< 1.2	< 12,000	< 13.6
Silver	C1n	External terminals (solder balls)	< 0.54	< 5,400	< 6.1

1. This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2002). See "EIA Materials of Interest" on page 4-10 for a complete listing.

ADDITIONAL INFORMATION / ADDITIONAL MATERIALS

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material of Interest	wt %	ppm	mg
Epoxy	< 0.79	< 7,900	< 8.9
BT Resin	< 10.1	< 101,000	< 114
Phosphorus Compounds	< 0.12	< 1,200	< 1.4
Organic Silicon compounds	< 0.56	< 5,600	< 6.3
Phosphorus	< 0.12	< 1,200	< 1.4
Silicon	< 3.1	< 31,000	< 35
SiO ₂ Filler (Fused Silica)	< 28.4	< 284,000	< 321
Tin	< 9.2	< 92,000	< 104
Carbon Black	< 0.21	< 2,100	< 2.4
Nickel	< 2.9	< 29,000	< 33
Silica	< 0.38	< 3,800	< 4.2
SiO ₂ Glass Mesh	< 13.4	< 134,000	< 151.4
Solder Mask	< 4.4	< 44,000	< 49.7
Organic Oxygen Compounds	< 4.1	< 41,000	< 46.3
Halogenated Aromatic Compounds	< 0.29	< 2,900	< 3.3
Organic Halogen Compounds	< 0.29	< 2,900	< 3.3
Other Halogenated Aromatic Compounds	< 0.29	< 2,900	< 3.3
Other Oxides and Hydroxides	< 0.56	< 5,600	< 6.3

MATERIAL DECLARATION DATA SHEET

Package: PBGA BGA 388

Average Weight: 3.70 grams

Description: Semiconductor Device

Contact: james.casto@amd.com

CONTROLLED MATERIALS

X The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

RESTRICTED MATERIALS

X The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

MATERIALS OF INTEREST

X The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Wt %	ppm	mg
Antimony Compounds	Cl _a	Molding compound flame retardant	< 0.23	< 2,265	< 8.3
Lead (Pb)	Cl _f	Solder ball	< 7.0	< 69,971	< 259.0
Copper	Cl _k	Substrate	< 13.8	< 138,052	< 511.0
Nickel	Cl _h	Substrate	< 0.63	< 6,267	< 23.2
Gold	Cl _i	Wire bonding	< 0.71	< 7,100	< 26.1
Silver	Cl _n	Die attach	< 0.18	< 1,847	< 6.8

1. This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide

(February 2002). See "EIA Materials of Interest" on page 4-10 for a complete listing.

ADDITIONAL INFORMATION / ADDITIONAL MATERIALS

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material of Interest	wt %	ppm	mg
Epoxy	< 7.98	< 79,707	< 295.0
Silicon	< 0.78	< 7,834	< 29.0
SiO ₂ Filler (Fused Silica)	< 33.26	< 332,567	< 1,231.0
Tin	< 11.94	< 119,411	< 442.0
Carbon Black	< 0.11	< 1,134	< 4.2
Silica	< 0.42	< 4,200	< 15.4
Mixed Siloxanes	< 0.76	< 7,600	< 28.0
Phenolic Resin	< 2.64	< 26,448	< 97.9
Acrylic	< 4.16	< 41,604	< 154.0
Bromine	< 0.04	< 405	< 1.5
Brominated Resin	< 0.76	< 7,556	< 28.0
Bisphenol	< 6.27	< 62,677	< 232.0
Triazol	< 8.35	< 83,479	< 309.0

MATERIAL DECLARATION DATA SHEET

Package: PBGA BGA388 **Average Weight:** 3.78 grams
Description: Pb-free Semiconductor Device **Contact:** james.casto@amd.com

CONTROLLED MATERIALS

X The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

RESTRICTED MATERIALS

X The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

MATERIALS OF INTEREST

X The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference	Description of Use	Wt %	ppm	mg
Antimony Compounds	CIa	Molding compound flame retardant	< 0.04	< 4,000	< 1.4
Gold	CIi	Wire bonding	< 0.53	< 5,300	< 19.9
Silver	CIj	External terminals (solder balls) and die attach	< 0.83	< 8,300	< 31.4

I. This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide

(February 2002). See "EIA Materials of Interest" on page 4-10 for a complete listing.

ADDITIONAL INFORMATION / ADDITIONAL MATERIALS

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material of Interest	wt %	ppm	mg
Epoxy	< 7.01	< 70,050	< 264.8
Silicon	< 0.77	< 7,670	< 29.0
SiO2 Filler (Fused Silica)	< 64.38	< 643,800	< 2,433.0
Tin	< 19.74	< 197,368	< 746.1
Carbon Black	< 0.31	< 3,100	< 11.9
Silica	< 0.41	< 4,100	< 15.4
Mixed Siloxanes	< 0.74	< 7,400	< 28.0
Phenolic Resin	< 4.23	< 42,266	< 159.8
Metal Hydroxide	< 1.02	< 10,229	< 38.7

MATERIAL DECLARATION DATA SHEET

Package: HSBGA BGU 396

Average Weight: 5.59 grams

Description: Pb-free Semiconductor Device

Contact: james.casto@amd.com

CONTROLLED MATERIALS

X The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

RESTRICTED MATERIALS

X The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

MATERIALS OF INTEREST

X The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Wt %	ppm	mg
Nickel	CIh	Substrate	< 0.55	< 5,535	< 31.0
Copper	CIk	Substrate and heat slug	< 43.95	< 429,501	< 2,402.2
Gold	CII	Wire bonding and substrate	< 0.62	< 6,204	< 34.7
Silver	CIIn	Die attach and substrate	< 0.55	< 5,566	< 31.1

1. This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide

(February 2002). See "EIA Materials of Interest" on page 4-10 for a complete listing.

ADDITIONAL INFORMATION / ADDITIONAL MATERIALS

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material of Interest	wt %	ppm	mg
Epoxy	< 4.81	< 48,055	< 268.9
Silicon	< 0.75	< 7,474	< 41.8
SiO2 Filler (Fused Silica)	< 24.03	< 240,246	< 1,343.7
Tin	< 12.37	< 123,667	< 691.7
Carbon Black	< 0.12	< 1,250	< 7.0
Phenolic Resin	< 1.00	< 1,004	< 56.0
Acrylic	< 2.77	< 27,677	< 154.8
Bisphenol	< 4.71	< 47,052	< 263.2
Triazol	< 4.15	< 41,516	< 232.2



Material Declaration Sheet

Package Type: 432L EBGA

Description: Semiconductor (Geode Products)

Average Weight: 10.87 grams

Contact: james.casto@amd.com

The following materials are contained in products using this package:

Item	Component	% of component in item	Wt of Item (mg)	Wt. of component (mg)	ppm of component in package
Substrate	BT	66.15	2268.22	1,500.40	138031
	Cu	29.56		670.42	61676
	Ni	0.0719		1.63	150
	Au	0.0224		0.51	47
	Solder Mask	4.20		95.26	8764
Heat Sink	Cu	99.38	7168.00	7,123.20	655308
	Ni	0.63		44.80	4121
Plastic	SiO2	73	455.55	332.55	30594
	ECN	23.5		107.05	9849
	Sb2O3	2.6		11.84	1090
	Br	0.9		4.10	377
Chip	Si	99.4	125.53	124.77	11479
	Al	0.6		0.75	69
Die Attach	Ag	75	9.71	7.28	670
	Epoxy Resin	25		2.43	223
Wires	Au	100	14.88	14.88	1369
Solder Balls	Sn	63	828.11	521.71	47996
	Pb	37		306.40	28188
				10,870.00	1,000,000

Component	Chemical Name
BT	Bismaleimide triazine
Solder Mask	Unknown
ECN	Epoxy cresol novalac resin
Br	Brominated flame retardant; part of cured epoxy matrix in final product.



Material Declaration Sheet

Package Type: 481 TEPBGA
Description: Semiconductor (Geode Products)

Average Weight: 8.58 grams
Contact: jim.casto@amd.com

The following materials are contained in products using this package:

Item	Component	% of component in item	Wt of Item (mg)	Wt. of component (mg)	ppm of component in package
Substrate	BT	25.32	3,339.40	845.64	98,493.88
	Cu	68.52		2,288.33	266,527.23
	Ni	0.458		15.30	1,782.04
	Au	0.062		2.08	241.78
	Solder Mask	5.63		188.06	21,904.06
Heat Spreader	Cu	98.63	1,900.00	1,873.99	218,268.01
	Cr	1.37		26.01	3,029.89
Plastic	SiO2	86.7	2,297.71	1,992.12	232,027.22
	ECN	12		275.73	32,114.49
	Sb2O3	0.9		20.68	2,408.59
	Br	0.4		9.19	1,070.48
Chip	Si	99.4	100.32	99.72	11,614.56
	Al	0.6		0.60	70.11
Die Attach	Ag	75	9.71	7.28	848.06
	Epoxy Resin	25		2.43	282.69
Wires	Au	100	9.56	9.56	1,113.87
Solder Balls	Sn	63	929.00	585.27	68,167.91
	Pb	37		343.73	40,035.12
				8,586	1,000,000

Component	Chemical Name
BT	Bismaleimide triazine
Solder Mask	Unknown
ECN	Epoxy cresol novalac resin
Br	Brominated flame retardant; part of cured epoxy matrix in final product.

MATERIAL DECLARATION DATA SHEET

Package: PBGA BGU481 **Average Weight:** 8.73 grams
Description: Pb-free Semiconductor Device **Contact:** james.casto@amd.com

CONTROLLED MATERIALS

X The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

RESTRICTED MATERIALS

X The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

MATERIALS OF INTEREST

X The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Wt %	ppm	mg
Copper	C1k	Substrate	<8.07	<80738	<704.87
		Heat Slug	<36.32	<363243	<3171.26
Nickel	C1h	Substrate	<0.29	<2853	<24.91
		Heat Slug	<0.01	<146	<1.28
Gold	C1l	Wire bonding	<0.20	<1973	<17.23
		Substrate	<0.10	<1006	<8.78
Silver	C1n	Die attach	<0.06	<628	<5.48
		Solder Ball	<0.35	<3486	<30.43

1. This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide

(February 2002). See "EIA Materials of Interest" on page 4-10 for a complete listing.

ADDITIONAL INFORMATION / ADDITIONAL MATERIALS

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material of Interest	wt %	ppm	mg
Epoxy	<4.17	<41,655	<363.7
Silicon	<0.62	<6,191	<54.05
SiO2 Filler (Fused Silica)	<26.94	<269,394	<2,351.92
Tin	<9.61	<96,109	<839.07
Carbon Black	<0.16	<1,604	<14.00
Silica	<2.15	<21,534	<188.00
Phenolic Resin	<1.44	<14,432	<126.00
Metal Hydroxide	<0.64	<6,414	<56.00



Material Declaration Sheet

Package: PBGA, BGA 569
Description: Semiconductor

Average Weight: 5.2 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 5,000 PPM
Brominated Polymers	C2c	Brominated Polymer in Molding Compound	< 2.0%
Copper	C1k	Traces within substrate	< 12 wt%
Gold	C1l	Wire Bonding and Internal Plating	< 1,000 PPM
Nickel	C1h	Internal Plating	< 4,000 PPM
Pb (Lead)	C1f	Solder Balls	< 8.0 wt%
Silver	C1n	Die Attach	< 5,000 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Amines	< 200 PPM	Silica (Quartz)	< 2,000 PPM
BT Resin	< 12.5 wt %	Silicon	< 2.0 wt%
Carbon Black	< 1,600 PPM	SiO ₂ Filler (Fused Silica)	< 23 wt %
Chlorine	< 750 PPM	SiO ₂ Glass Mesh	< 17 wt %
Epoxy	< 3.5 wt %	Solder Mask	< 7 wt %
Phenol, Polymer with Formaldehyde	< 3.5 wt %	Tin	< 13.5 wt %
Silica (Christobalite)	< 2,000 PPM		



Material Declaration Sheet

Package: PLCC, PL 020
Description: Semiconductor

Average Weight: 0.73 grams
Contact: james.casto @amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 1.9%
Brominated Polymers	C2c	Bromine Based Polymer	< 3,400 PPM
Copper	C1k	Leads	< 29.5%
Gold	C1l	Wire Bonding	< 1,100 PPM
Pb (Lead)	C1f	Leads	< 2,400 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 4,500 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 18%	Silicon	< 2.6%
Iron	< 7,400 PPM	Silicon Oxides	< 46%
Organic Phosphorous Compounds	< 2.5%	Tin	< 1.4%
Organic Silicon Compounds	< 2.5%	Zinc	< 400 PPM
Phosphorus	< 200 PPM		



Material Declaration Sheet

Package: PLCC, PL 028
Description: Semiconductor

Average Weight: 1.2 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 2%
Brominated Polymers	C2c	Polymers in Molding Compound	< 4,000 PPM
Copper	C1k	Leads	< 26%
Gold	C1l	Wire Bonding	< 1,000 PPM
Pb (Lead)	C1f	Leads	< 2,100 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 3,900 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy	< 19%	Silicon	< 2.6%
Iron	< 7,000 PPM	Silicon Oxides	< 49%
Organic Phosphorous Compounds	< 2,200 PPM	Tin	< 1.2%
Organic Silicon Compounds	< 2.7%	Zinc	< 300 PPM
Phosphorus	< 150 PPM		



Material Declaration Sheet

Package: PLCC, PL 032
Description: Semiconductor

Average Weight: 1.1 grams
Contact: james.casto @amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 1.8%
Brominated Polymers	C2c	Polymers in Molding Compound	< 3,300 PPM
Copper	C1k	Leads	< 35%
Gold	C1l	Wire Bonding	< 2,000 PPM
Pb (Lead)	C1f	Leads	< 2,600 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 5,100 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 16.5%	Silicon	< 4.5%
Iron	< 8,500 PPM	Silicon Oxides	< 44%
Organic Phosphorous Compounds	< 2,000 PPM	Tin	< 1.5%
Organic Silicon Compounds	< 2.3%	Zinc	< 400 PPM
Phosphorus	< 200 PPM		



Material Declaration Sheet

Package: PLCC, PL 044
Description: Semiconductor

Average Weight: 2.4 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 2.1%
Brominated Polymers	C2c	Polymers in Molding Compound	< 3,800 PPM
Copper	C1k	Leads	< 26%
Gold	C1l	Wire Bonding	< 1,000 PPM
Pb (Lead)	C1f	Leads	< 1,600 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 2,800 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 19%	Silicon	< 2%
Iron	< 6,500 PPM	Silicon Oxides	< 51%
Organic Phosphorous Compounds	< 2,300 PPM	Tin	< 9,000 PPM
Organic Silicon Compounds	< 2.7%	Zinc	< 300 PPM
Phosphorus	< 150 PPM		



Material Declaration Sheet

Package: PLCC, PL 068
Description: Semiconductor

Average Weight: 4.8 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 2.2%
Brominated Polymers	C2c	Polymers in Molding Compound	< 4,100 PPM
Copper	C1k	Leads	< 19.5%
Gold	C1l	Wire Bonding	< 900 PPM
Pb (Lead)	C1f	Leads	< 1,200 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 1,300 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 20.3%	Silicon	< 8,000 PPM
Iron	< 5,000 PPM	Silicon Oxides	< 54%
Organic Phosphorous Compounds	< 2,400 PPM	Tin	<6,500 PPM
Organic Silicon Compounds	< 2.9%	Zinc	< 200 PPM
Phosphorus	< 100 PPM		



Material Declaration Sheet

Package: PLCC, PL 084
Description: Semiconductor

Average Weight: 7.3 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 2.3%
Brominated Polymers	C2c	Polymers in Molding Compound	< 4,100 PPM
Copper	C1k	Leads	< 20%
Gold	C1l	Wire Bonding	< 600 PPM
Pb (Lead)	C1f	Leads	< 1,000 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 1,300 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 21%	Silicon	< 7,500 PPM
Iron	< 5,000 PPM	Silicon Oxides	< 54%
Organic Phosphorous Compounds	< 2,500 PPM	Tin	< 5,300 PPM
Organic Silicon Compounds	< 2.9%	Zinc	< 200 PPM
Phosphorus	< 100 PPM		



Material Declaration Sheet

Package: PQFP, PQR 044
Description: Semiconductor

Average Weight: 0.56 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 2,500 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 1,300 PPM
Copper	C1k	Leads	< 31.5%
Gold	C1l	Wire Bonding	< 3,000 PPM
Pb (Lead)	C1f	Leads	< 400 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 1%

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 7.5%	Silicon	< 5.5%
Iron	< 8,000 PPM	Silicon Oxides	< 53%
Organic Phosphorous Compounds	< 2,000 PPM	Tin	< 1.8%
Organic Silicon Compounds	< 5,000 PPM	Zinc and Zinc Compounds	< 750 PPM
Phosphorus	< 200 PPM		



Material Declaration Sheet

Package: PQFP, PQR 080
Description: Semiconductor

Average Weight: 1.8 grams
Contact: james.casto @amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 3,200 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 1,600 PPM
Copper	C1k	Leads	< 17.8%
Gold	C1l	Wire Bonding	< 1,850 PPM
Pb (Lead)	C1f	Leads	< 1,200 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 6,300 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 9.6%	Phosphorus	< 100 PPM
Iron	< 500 PPM	Silicon	< 5%
Organic Phosphorous Compounds	< 2,400 PPM	Silicon Oxides	< 69.5%
Organic Silicon Compounds	< 6,000 PPM	Tin	< 1.1%
Phenol and Phenolic Compounds as Monomers	< 50 PPM	Zinc and Zinc Compounds	< 400 PPM



Material Declaration Sheet

Package: PQFP, PQR 100
Description: Semiconductor

Average Weight: 1.9 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 3,200 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 1,600 PPM
Copper	C1k	Leads	< 18.9%
Gold	C1l	Wire Bonding	< 2,500 PPM
Pb (Lead)	C1f	Leads	< 1,300 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 5,700 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 9.3%	Silicon	< 4.5%
Iron	< 4,700 PPM	Silicon Oxides	< 67.6%
Organic Phosphorous Compounds	< 2,400 PPM	Tin	< 1.1%
Organic Silicon Compounds	< 5,900 PPM	Zinc and Zinc Compounds	< 500 PPM
Phenol and Phenolic Compounds as Monomers	< 40 PPM		

MATERIAL DECLARATION DATA SHEET

Package: PQFP PQR 100 (Pb-free) **Average Weight:** 1.60 grams
Description: Semiconductor Device **Contact:** james.casto@amd.com

CONTROLLED MATERIALS

X The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

RESTRICTED MATERIALS

X The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

MATERIALS OF INTEREST

X The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Wt %	ppm	mg
Copper	C1k	Leadframe and internal plating	<19.0	< 190,000	< 303.52
Nickel	C1h	Leadframe	< 0.59	< 5,910	< 9.45
Gold	C1l	Wire bonding	< 0.30	< 3,000	< 4.75
Silver	C1n	Die attach	< 0.15	< 1,500	< 2.36

1. This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide

(February 2002). See "EIA Materials of Interest" on page 4-10 for a complete listing.

ADDITIONAL INFORMATION / ADDITIONAL MATERIALS

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material of Interest	wt %	ppm	mg
Epoxy Resin	< 6.14	< 61,400	< 98.1
Silicon	< 1.66	< 16,620	< 26.6
SiO ₂ Filler (Fused Silica)	< 65.0	< 650,000	< 1,038.0
Tin	< 1.79	< 17,900	< 28.5
Carbon Black	< 0.38	< 3,822	< 6.1
Magnesium	<0.03	< 300	< 0.5
t-Butylphenyl glycidyl ether	< 0.02	< 200	< 0.2
Phenolic Resin	< 4.97	< 49,700	< 79.5



Material Declaration Sheet

Package: PQFP, PRH 100
Description: Semiconductor

Average Weight: 1.9 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 3,100 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 1,600 PPM
Copper	C1k	Leads	< 19%
Gold	C1l	Wire Bonding	< 2,100 PPM
Pb (Lead)	C1f	Leads	< 1,300 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 6,500 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 9.1%	Silicon	< 5%
Iron	< 4,700 PPM	Silicon Oxides	< 66%
Organic Phosphorous Compounds	< 2,400 PPM	Tin	< 1.1%
Organic Silicon Compounds	< 5,800 PPM	Zinc and Zinc Compounds	< 600 PPM



Material Declaration Sheet

Package: PQFP, PQR 144
Description: Semiconductor

Average Weight: 5.9 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 3,600 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 1,800 PPM
Copper	C1k	Leads	< 12%
Gold	C1l	Wire Bonding	< 1,400 PPM
Pb (Lead)	C1f	Leads	< 700 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 2,400 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 10.5%	Silicon	< 1.6%
Iron	< 3,000 PPM	Silicon Oxides	< 75%
Organic Phosphorous Compounds	< 2,700 PPM	Tin	< 5,600 PPM
Organic Silicon Compounds	< 6,500 PPM	Zinc and Zinc Compounds	< 600 PPM
Phenol and Phenolic Compounds as Monomers	< 45 PPM		



Material Declaration Sheet

Package: PQFP, PQR 160
Description: Semiconductor

Average Weight: 5.8 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 1.8%
Brominated Epoxy Resin	C2c	Molding Compound	< 2.2%
Copper	C1k	Leads	< 13.5%
Gold	C1l	Wire Bonding	< 1,700 PPM
Pb (Lead)	C1f	Plating of Leads	< 800 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Leads	< 2,200 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Carbon Black	< 2,600 PPM	Phenolic Polymers	< 4.6%
Epoxy Concentration	< 8.7%	Silicon	< 1.6%
Iron	< 3,300 PPM	Silicon Oxides	< 75%
Organic Phosphorous Compounds	< 2,700 PPM	Tin	< 6,200 PPM
Organic Silicon Compounds	< 6,500 PPM	Zinc	< 140 PPM



Material Declaration Sheet

Package: PQFP, PQR 168
Description: Semiconductor

Average Weight: 5.8 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 4,000 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 5,600 PPM
Copper	C1k	Leads	< 10.2%
Gold	C1l	Wire Bonding	< 1,400 PPM
Pb (Lead)	C1f	Leads	< 850 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 2,500 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 10.4%	Silicon	< 1.8%
Iron	< 2,600 PPM	Silicon Oxides	< 76%
Organic Phosphorous Compounds	< 2,700 PPM	Tin	< 6,500 PPM
Organic Silicon Compounds	< 6,600 PPM	Zinc and Zinc Compounds	< 600 PPM



MATERIAL DECLARATION DATA SHEET

Package: PQL 176 (Plastic Quad Flat Package)
Description: Semiconductor

Average Weight: 1.9 grams
Contact: James.Casto@amd.com

MATERIALS OF INTEREST

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template.

If so, please complete the following table.

Material of Interest	Appendix A Reference	Description of Use	Concentration
Antimony Trioxide	C1a	Molding compound flame retardant	< 7,600 PPM
Brominated Polymers	C2c	Molding compound polymer	< 4,600 PPM
Chromium	C1e	Leadframe	< 750 PPM
Copper	C1k	Leadframe	< 23 wt%
Gold	C1l	Wire Bonding	< 4,300 PPM
Organic Phosphorus Compounds	C2	Catalyst in molding compound	< 2,400 PPM
Pb (Lead)	C1f	Leadframe plating	< 1,300 PPM
Silver	C1n	Die attach and plating of internal leads	< 8,500 PPM

ADDITIONAL INFORMATION / ADDITIONAL MATERIALS

Material	Concentration
Epoxy	< 15 wt%
Organic silicon compounds	< 5,800 PPM
Phenol or phenolic monomer residue	< 40 PPM
Silicon	< 4.2 wt%
SiO ₂ filler	< 60 wt%
Tin	< 1.1 wt%
Zinc and zinc compounds	< 1,000 PPM



Material Declaration Sheet

Package: PQFP, PQR 208
Description: Semiconductor

Average Weight: 5.7 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 3,600 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 1,800 PPM
Copper	C1k	Leads	< 12.2%
Gold	C1l	Wire Bonding	< 2,300 PPM
Pb (Lead)	C1f	Leads	< 800 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 3,100 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 10.5%	Silicon	< 2.3%
Iron	< 3,000 PPM	Silicon Oxides	< 77%
Organic Phosphorous Compounds	< 2,800 PPM	Tin	< 6,500 PPM
Organic Silicon Compounds	< 7,000 PPM	Zinc and Zinc Compounds	< 600 PPM
Phenol and Phenolic Compounds as Monomers	< 50 PPM		



Material Declaration Sheet

Package: PQFP, PRH 208
Description: Semiconductor

Average Weight: 5.8 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 3,700 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 2,000 PPM
Copper	C1k	Leads	< 10.5%
Gold	C1l	Wire Bonding	< 2,500 PPM
Pb (Lead)	C1f	Leads	< 900 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 1,500 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 10.5%	Silicon	< 7,000 PPM
Iron	< 2,600 PPM	Silicon Oxides	< 77%
Organic Phosphorous Compounds	< 2,700 PPM	Tin	< 6,100 PPM
Organic Silicon Compounds	< 7,000 PPM	Zinc and Zinc Compounds	< 600 PPM
Phenol and Phenolic Compounds as Monomers	< 50 PPM		



Material Declaration Sheet

Package: PQFP, PQB 132
Description: Semiconductor

Average Weight: 6.0 grams
Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 3,600 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 2,000 PPM
Copper	C1k	Leads	< 10.5%
Gold	C1l	Wire Bonding	< 1,600 PPM
Pb (Lead)	C1f	Leads	< 600 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 2,400 PPM

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Epoxy Concentration	< 10.5%	Silicon	< 1.8%
Iron	< 2,800 PPM	Silicon Oxides	< 77%
Organic Phosphorous Compounds	< 2,800 PPM	Tin	< 4,800 PPM
Organic Silicon Compounds	< 7,000 PPM	Zinc and Zinc Compounds	< 600 PPM



Material Declaration Sheet

Package: TQFP, PQT 044

Average Weight: 0.28 grams

Description: Semiconductor

Contact: larry.dungan@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 2,800 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 1,400 PPM
Copper	C1k	Leads	< 34%
Gold	C1l	Wire Bonding	< 6,300 PPM
Pb (Lead)	C1f	Leads	< 2,200 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 2.5%

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Chromium	< 1,100 PPM	Silicon	< 8.5%
Epoxy Concentration	< 8.2%	Silicon Oxides	< 60%
Organic Phosphorous Compounds	< 2,200 PPM	Tin	< 1.9%
Organic Silicon Compounds	< 5,200 PPM	Zinc and Zinc Compounds	< 1,000 PPM
Phenol and Phenolic Compounds as Monomers	< 35 PPM		



Material Declaration Sheet

Package: TQFP, PQT 064

Average Weight: 0.30 grams

Description: Semiconductor

Contact: larry.dungan@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Concentration
Antimony Trioxide	C1a	Flame Retardant in Molding Compound	< 2,300 PPM
Brominated Polymers	C2c	Polymers in Molding Compound	< 1,200 PPM
Copper	C1k	Leads	< 37%
Gold	C1l	Wire Bonding	< 7,500 PPM
Pb (Lead)	C1f	Leads	< 2,700 PPM
Silver	C1n	Heat Conduction Component of Die Attach, Plating of Internal Leads	< 1.5%

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2000). See "EIA Materials of Interest" on page Chapter 4-10 for a complete listing.

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Concentration	Material	Concentration
Chromium	< 1,200 PPM	Silicon	< 7%
Epoxy Concentration	< 7%	Silicon Oxides	< 48%
Organic Phosphorous Compounds	< 1,800 PPM	Tin	< 2.5%
Organic Silicon Compounds	< 4,200 PPM	Zinc and Zinc Compounds	< 1,200 PPM
Phenol and Phenolic Compounds as Monomers	< 30 PPM		

Material Declaration Sheet

Package: PQFP, PQT 080 (with SnPb Finish)

Average Weight: 2.2 grams

Date Code: 19 July 2004

Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Mass (mg)	Concentration (ppm)	Concentration (wt%)
Antimony Oxides	C1a	Mold Compound	< 26.4	< 12,000	< 1.2
Copper	C1k	Leadframe	< 405	< 184,000	< 18.4
Gold	C1l	Wire Bonds	< 4.0	< 1,800	< 0.18
Lead (Pb)	C1f	Solder Plating	< 2.0	< 900	< 0.090
Nickel	C1h	Internal Plating	< 12.8	< 5,800	< 0.58
Silver	C1n	Internal Plating	< 3.7	< 1,700	< 0.17

Note:

- 1 This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2002).

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Mass (mg)	Concentration (ppm)	Concentration (wt%)
Amine resins	< 0.11	< 52	< 0.0052
Brominated Epoxy Resin	< 26.4	< 12,000	< 1.20
1,4-Butanedioldiglycidyl Ether	< 0.088	< 40	< 0.0040
Carbon Black	< 9.0	< 4,100	< 0.41
Epoxy	< 143	< 65,000	< 6.5
Magnesium compounds	< 0.66	< 300	< 0.030
Phenolic polymer with formaldehyde	< 143	< 65,000	< 6.5
Silicon	< 13.6	< 6,200	< 0.62
SiO ₂ Filler	< 1,412	< 642,000	< 64.2
Tin	< 11.4	< 5,200	< 0.52

Material Declaration Sheet

Package: PQFP, PQT 080 (Pb-free)

Average Weight: 2.2 grams

Date Code: 19 July 2004

Contact: james.casto@amd.com

Controlled Materials

- The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

- The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

- The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Mass (mg)	Concentration (ppm)	Concentration (wt%)
Copper	C1k	Leadframe	< 396	< 180,000	< 0.18
Gold	C1l	Wire Bonds	< 4.4	< 2,000	< 0.002
Nickel	C1h	Internal Plating	< 13.2	< 6,000	< 0.006
Silver	C1n	Internal Plating	< 4.4	< 2,000	< 0.002

Note:

- ¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2002).

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Mass (mg)	Concentration (ppm)	Concentration (wt%)
Acid anhydrides	< 0.022	< 10	< 0.0010
Amine resins	< 0.022	< 10	< 0.0010
Carbon Black	< 4.4	< 2,000	< 0.20
Epoxy	< 90	< 41,000	< 4.1
Magnesium	< 0.66	< 300	< 0.030
Organic phosphorus compounds	< 9.0	< 4,100	< 0.41
Phenolic polymer with formaldehyde	< 90	< 41,000	< 4.1
Silicon	< 13	< 6,000	< 0.60
Silicone	< 14	< 6,500	< 0.65
SiO ₂ Filler	< 1,562	< 710,000	< 71.0
Tin	< 13	< 5,700	< 0.57

MATERIAL DECLARATION DATA SHEET

Package: TQFP PQL 100 (Pb-free)

Average Weight: 0.73 grams

Description: Semiconductor Device

Contact: james.casto@amd.com

CONTROLLED MATERIALS

X The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

RESTRICTED MATERIALS

X The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

MATERIALS OF INTEREST

X The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Wt %	ppm	mg
Copper	Clk	Leadframe and external plating	<26.8	< 268,000	< 195.0
Nickel	Clh	Leadframe	< 0.83	< 8,300	< 6.1
Gold	CII	Wire bonding	< 0.64	< 6,400	< 4.7
Silver	Cln	Die attach and internal plating	< 1.00	< 10,000	< 7.4

1. This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide

(February 2002). See "EIA Materials of Interest" on page 4-10 for a complete listing.

ADDITIONAL INFORMATION / ADDITIONAL MATERIALS

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material of Interest	wt %	ppm	mg
Epoxy Resin	< 4.71	< 47,100	< 34.3
Silicon	< 2.35	< 23,500	< 17.2
SiO2 Filler (Fused Silica)	< 58.20	< 582,000	< 423.8
Tin	< 1.49	< 14,900	< 10.9
Carbon Black	< 0.20	< 2,000	< 1.5
Magnesium	<0.04	< 400	< 0.3
Acid Anhydrides	< 0.04	< 400	< 0.3
Phenolic Polymer	< 3.34	< 33,400	< 24.3
Phosphorus Compounds (as Catalyst)	< 0.37	< 3,700	< 2.7
Bismuth	<0.03	< 300	< 0.2

Material Declaration Sheet

Package: PQFP, PQT 160 (Pb-free)

Average Weight: 5.7 grams

Date Code: 19 July 2004

Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Mass (mg)	Concentration (ppm)	Concentration (wt%)
Copper	C1k	Leadframe	< 713	< 125,000	< 12.5
Gold	C1l	Wire Bonds	< 8.6	< 1,500	< 0.15
Nickel	C1h	Internal Plating	< 26	< 4,500	< 0.45
Silver	C1n	Internal Plating	< 11.4	< 2,000	< 0.20

Note:

¹ This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2002).

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Mass (mg)	Concentration (ppm)	Concentration (wt%)
Al ₂ O ₃	< 0.17	< 30	< 0.0030
Carbon Black	< 17	< 3,000	< 0.30
Epoxy	< 428	< 75,000	< 7.5
Ester Resins	< 0.86	< 150	< 0.015
Magnesium	< 1.1	< 200	< 0.020
Organic phosphorus compounds	< 17	< 3,000	< 0.30
Phenolic polymer with formaldehyde	< 342	< 60,000	< 6.0
Silicon	< 74	< 13,000	< 1.3
SiO ₂ Filler	< 4,161	< 730,000	< 73.0
Tin	< 40	< 7,100	< 0.71

Material Declaration Sheet

Package: PQFP, PQT 160 (with SnPb Finish)

Average Weight: 5.7 grams

Date Code: 19 July 2004

Contact: james.casto@amd.com

Controlled Materials

The product neither contains nor was manufactured with materials listed in Section A of EIA's Material Declaration Template.

Restricted Materials

The product does not contain listed materials in prohibited applications indicated in Section B of EIA's Material Declaration Template.

Materials of Interest

The product does contain listed materials of interest as indicated by Section C of EIA's Material Declaration Template. These materials are listed in the following table.

Material of Interest	Reference ¹	Description of Use	Mass (mg)	Concentration (ppm)	Concentration (wt%)
Antimony Oxides	C1a	Mold Compound	< 103	< 18,000	< 1.8
Copper	C1k	Leadframe	< 713	< 125,000	< 12.5
Gold	C1l	Wire Bonds	< 8.6	< 1,500	< 0.15
Lead (Pb)	C1f	Solder Plating	< 6.3	< 1,100	< 0.11
Nickel	C1h	Internal Plating	< 26	< 4,500	< 0.45
Silver	C1n	Internal Plating	< 11	< 2,000	< 0.20

Note:

- 1 This reference corresponds to the item number of each material of interest as defined in Section C of EIA's Material Declaration Guide (February 2002).

Additional Information/Additional Materials

The following materials are not listed in EIA's Material Declaration Template, but are contained in this package.

Material	Mass (mg)	Concentration (ppm)	Concentration (wt%)
Brominated Epoxy Resin	< 125	< 22,000	< 2.2
Butyrolacetone	< 0.40	< 70	< 0.0070
Carbon Black	< 17	< 3,000	< 0.30
Epoxy	< 507	< 89,000	< 8.9
Magnesium	< 1.4	< 250	< 0.025
Organic phosphorus compounds	< 17	< 3,000	< 0.30
Phenolic polymer with formaldehyde	< 257	< 45,000	< 4.5
Silicon	< 74	< 13,000	< 1.3
SiO ₂ Filler	< 3,876	< 680,000	< 68.0
Tin	< 34	< 6,000	< 0.60