



Overview

The 32-lead TSOP package is qualified by at least four separate assembly sites. Packages that are assembled at different assembly sites will have differences in the materials that are present in the package. These differences will not impact the compliance of the package to the RoHS and JIG requirements. Compliance is guaranteed provided that the appropriate part number is ordered.

Package Code	32T
Package Description	32-Lead, 8 x 20 mm Package, Plastic Thin Small Outline Package, Type I (TSOP)
Max Reflow Temperature	260 Celsius
JESD97 Category	e3

Banned Substances

The European Union passed Directive 2002/95/EC on January 27, 2003, that defines the Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS).

The member companies that comprise EIA/JIG/JGPSSI developed JIG-101 in April 2005 to track and disclose specific information about the material composition of products to legal and market requirements. The Level A list is composed of materials and substances when used in products that are subject to currently enacted legislation. The Level B list is composed of materials and substances that the electrical and electronic equipment industry has determined relevant for disclosure.

Material / Substance	RoHS / JIG	Material Mass (g)	Material Concentration (ppm)
Cadmium	RoHS	0	n/a
Hexavalent Chromium	RoHS	0	n/a
Lead	RoHS	0	n/a
Mercury	RoHS	0	n/a
Polybrominated Biphenyls (PBB)	RoHS	0	n/a
Polybrominated Diphenyl Ethers (PBDE)	RoHS	0	n/a
Asbestos	JIG Level A	0	n/a
Certain Azo Colorants	JIG Level A	0	n/a
Cadmium and Cadmium Compounds	JIG Level A	0	n/a
Hexavalent Chromium and Hexavalent Chromium Compounds	JIG Level A	0	n/a
Lead and Lead Compounds	JIG Level A	0	n/a
Mercury and Mercury Compounds	JIG Level A	0	n/a
Ozone Depleting Substances (Class I and II)	JIG Level A	0	n/a
Polybrominated Biphenyls (PBB)	JIG Level A	0	n/a
Polybrominated Diphenyl Ethers (PBDE)	JIG Level A	0	n/a
Polychlorinated Biphenyls (PCB)	JIG Level A	0	n/a
Polychlorinated Naphthalenes	JIG Level A	0	n/a
Radioactive Substances	JIG Level A	0	n/a
Certain Shortchain Chlorinated Paraffins	JIG Level A	0	n/a
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	JIG Level A	0	n/a
Tributyl Tin Oxide (TBTO)	JIG Level A	0	n/a
Antimony and Antimony Compounds	JIG Level B	0	n/a
Arsenic and Arsenic Compounds	JIG Level B	0	n/a
Beryllium and Beryllium Compounds	JIG Level B	0	n/a
Bismuth and Bismuth Compounds	JIG Level B	0	n/a
Brominated Flame Retardants (other than PBB and PBDE)	JIG Level B	0	n/a
Nickel (external applications only)	JIG Level B	0	n/a
Certain Phthalates	JIG Level B	0	n/a
Selenium and Selenium Compounds	JIG Level B	0	n/a
Polyvinyl Chloride (PVC)	JIG Level B	0	n/a



32-Lead TSOP Package Material Declaration Data Sheet

Material Declaration # 1

Material	Substance	CAS #	Weight (g)	Homogeneous Material		Package	
				Percentage	ppm	Percentage	ppm
Leadframe	Copper (Cu)	7440-50-8	0.0818	97.4	974000	22.67	226700
	Iron (Fe)	7439-89-6	0.0021	2.4	24000	0.58	5800
	Zinc (Zn)	7440-66-6	0.0001	0.1	1000	0.02	200
	Phosphorous (P)	7723-14-0	0.0001	0.1	1000	0.02	200
Sub-Total			0.0841	100.0	1000000	23.29	232900
Integrated Circuit	Silicon (Si)	7440-21-3	0.0119	100.0	1000000	3.30	33000
Sub-Total			0.0119	100.0	1000000	3.30	33000
Die Attach	Silver (Ag)	7440-22-4	0.0006	72.1	721000	0.17	1700
	Epoxy Resin	9003-36-5	0.0002	19.5	195000	0.05	500
	t-Butyl Phenyl Glycidyl Ether	3101-60-8	< 0.0001	6.5	65000	0.01	100
	Butyl Cellosolve Acetate	112-07-2	< 0.0001	0.8	8000	< 0.01	< 100
	Phenolic Resin	92-88-6	< 0.0001	0.8	8000	< 0.01	< 100
	Dicyandiamide	461-58-5	< 0.0001	0.3	300	< 0.01	< 100
Sub-Total			0.0008	100.0	1000000	0.23	2300
Die Pad Plating	Silver (Ag)	7440-22-4	0.0011	100.0	1000000	0.29	2900
Sub-Total			0.0011	100.0	1000000	0.29	2900
Bond Wire	Gold (Au)	7440-57-5	0.0006	100.0	1000000	0.15	1500
Sub-Total			0.0006	100.0	1000000	0.15	1500
Encapsulation	Silica Fused	60676-86-0	0.2248	84.4	864000	62.27	622700
	Epoxy Resin	Trade Secret	0.0206	7.9	79000	5.69	56900
	Phenol Resin	Trade Secret	0.0140	5.4	54000	3.89	38900
	Carbon Black	1333-86-4	0.0008	0.3	3000	0.22	2200
Sub-Total			0.2602	100.0	1000000	72.07	720700
Terminal Plating	Tin (Sn)	7440-31-5	0.0024	100.0	1000000	0.67	6700
Sub-Total			0.0024	100.0	1000000	0.67	6700
Total			0.3611			100.00	1000000



Material Declaration # 2

Material	Substance	CAS #	Weight (g)	Homogeneous Material		Package	
				Percentage	ppm	Percentage	ppm
Leadframe	Copper (Cu)	7440-50-8	0.0818	97.4	974000	22.67	226700
	Iron (Fe)	7439-89-6	0.0021	2.4	24000	0.58	5800
	Zinc (Zn)	7440-66-6	0.0001	0.1	1000	0.02	200
	Phosphorous (P)	7723-14-0	0.0001	0.1	1000	0.02	200
Sub-Total			0.0841	100.0	1000000	23.29	232900
Integrated Circuit	Silicon (Si)	7440-21-3	0.0119	100.0	1000000	3.30	33000
Sub-Total			0.0119	100.0	1000000	3.30	33000
Die Attach	Silver (Ag)	7440-22-4	0.0007	75.0	750000	0.17	1700
	Epoxy Resin	Trade Secret	0.0002	15.1	151000	0.04	400
	Amine	Trade Secret	< 0.0001	3.3	33000	0.01	100
	Gamma Butyrolactone	96-48-0	< 0.0001	3.3	33000	0.01	100
	Epoxy Resin	Trade Secret	< 0.0001	3.3	33000	0.01	100
Sub-Total			0.0009	100.0	1000000	0.24	2400
Die Pad Plating	Silver (Ag)	7440-22-4	0.0011	100.0	1000000	0.29	2900
Sub-Total			0.0011	100.0	1000000	0.29	2900
Bond Wire	Gold (Au)	7440-57-5	0.0006	100.0	1000000	0.15	1500
Sub-Total			0.0006	100.0	1000000	0.15	1500
Encapsulation	Silica Fused	60676-86-0	0.2248	84.4	864000	62.26	622600
	Epoxy Resin	Trade Secret	0.0206	7.9	79000	5.69	56900
	Phenol Resin	Trade Secret	0.0140	5.4	54000	3.89	38900
	Carbon Black	1333-86-4	0.0008	0.3	3000	0.22	2200
Sub-Total			0.2602	100.0	1000000	72.06	720600
Terminal Plating	Tin (Sn)	7440-31-5	0.0024	100.0	1000000	0.67	6700
Sub-Total			0.0024	100.0	1000000	0.67	6700
Total			0.3611			100.00	1000000



Material Declaration # 3

Material	Substance	CAS #	Weight (g)	Homogeneous Material		Package	
				Percentage	ppm	Percentage	ppm
Leadframe	Copper (Cu)	7440-50-8	0.0818	97.4	974000	22.67	226700
	Iron (Fe)	7439-89-6	0.0021	2.4	24000	0.58	5800
	Zinc (Zn)	7440-66-6	0.0001	0.1	1000	0.02	200
	Phosphorous (P)	7723-14-0	0.0001	0.1	1000	0.02	200
Sub-Total			0.0841	100.0	1000000	23.29	232900
Integrated Circuit	Silicon (Si)	7440-21-3	0.0119	100.0	1000000	3.30	33000
Sub-Total			0.0119	100.0	1000000	3.30	33000
Die Attach	Silver (Ag)	7440-22-4	0.0007	75.8	758000	0.18	1800
	Epoxy Resin	Trade Secret	0.0001	13.9	139000	0.03	300
	Anhydride	Trade Secret	< 0.0001	7.2	72000	0.02	200
Sub-Total			0.0008	100.0	1000000	0.23	2300
Die Pad Plating	Silver (Ag)	7440-22-4	0.0011	100.0	1000000	0.29	2900
Sub-Total			0.0011	100.0	1000000	0.29	2900
Bond Wire	Gold (Au)	7440-57-5	0.0006	100.0	1000000	0.15	1500
Sub-Total			0.0006	100.0	1000000	0.15	1500
Encapsulation	Silica Fused	60676-86-0	0.2248	84.4	864000	62.27	622700
	Epoxy Resin	Trade Secret	0.0206	7.9	79000	5.69	56900
	Phenol Resin	Trade Secret	0.0140	5.4	54000	3.89	38900
	Carbon Black	1333-86-4	0.0008	0.3	3000	0.22	2200
Sub-Total			0.2602	100.0	1000000	72.07	720700
Terminal Plating	Tin (Sn)	7440-31-5	0.0024	100.0	1000000	0.67	6700
Sub-Total			0.0024	100.0	1000000	0.67	6700
Total			0.3611			100.00	1000000

Comments

- Reliability qualification reports are available upon request through the appropriate sales or marketing contact.
- Third party testing for RoHS substances has been completed on the homogeneous material level and are available upon request through the appropriate sales or marketing contact.
- Materials and/or substances not listed in the material declaration are considered not present in the product or not detectable trace levels.
- In order to report full 100 percent material declaration, some materials and/or substances have been rounded to the nearest 0.1 percent.
- Package material declarations are calculated using a combination of Material Safety Data Sheets (MSDS), material analysis testing, industry standard specifications and engineering calculations.

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