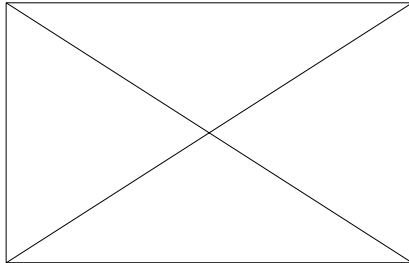
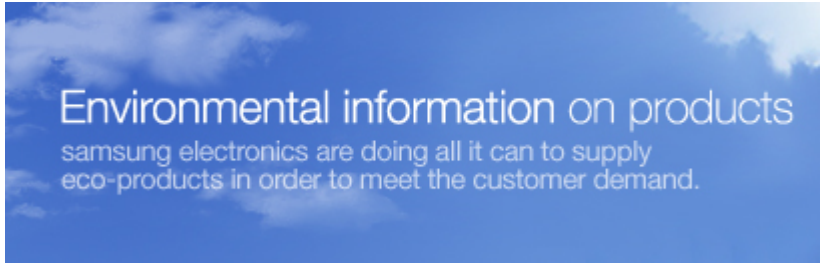


# Eco-Product



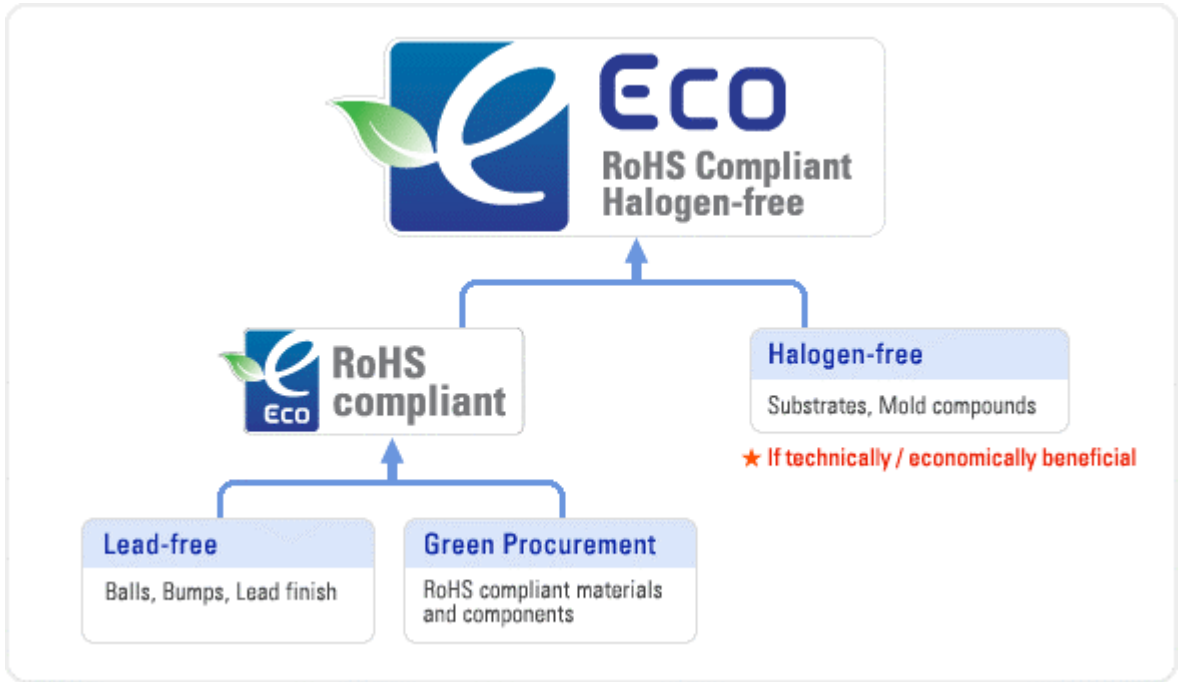
## SEMICONDUCTOR GLOBAL



Samsung Electronics puts a high value on the health and safety of mankind, and therefore pursues environmentally friendly business practices. As a part of such efforts, Samsung developed Lead-free technology in 2003, and set up a Lead-free product development system. In 2004, through the Green Procurement scheme, Samsung completed a supply chain that is free of six hazardous materials that are banned by EU RoHS regulations. Thanks to Lead-free technology and the Green Procurement scheme, now in 2005, the company is fully prepared to start mass production of all its product lines in compliance with RoHS. In addition, Samsung is developing new products that do not contain Halogenated Flame Retardants, which has emerged as a major environmental concern recently. Samsung Electronics is determined to become a leader in environmentally friendly technologies and eco-friendly semiconductor market.

- [Eco-Product Program](#)
- [Eco-Product Identification](#)
- [Samsung Electronics' Status about RoHS 6 restricted substances](#)
- [RoHS/WEEE and Related Legislation](#)

### Eco-Product Program



Since 2005, Samsung Electronics has developed a RoHS compliant supply system for all product lines based on Lead-free technology and a Green Procurement system. Furthermore, the company is planning to establish an Eco-Product supply system from January 2006, which is RoHS compliant and free of Halogen substances.



[top](#)

## Eco-Product Identification

*Samsung Electronics is currently labeling its products (modules) and packaging (modules, components) with an RoHS compliant logo.*

*JESD97, a Pb-free JEDEC standard, will be adopted soon.*

The RoHS compliant, Pb-free product will have a unique part number. You can check if a product is RoHS compliant, by entering the product code into the [RoHS compliant search](#).

Module	Product Label	
Component, Module	Inner bulk box label	

[top](#)

## Samsung Electronics' Status about RoHS 6 restricted substances

The table below shows the current status of Samsung Electronics products in regards to RoHS restricted substances.

Substance	MCV (Maximum Concentration Value)	Status of Samsung's Integrated Circuits	References
Cadmium	100 ppm of homogeneous material	Below threshold, trace impurity in BGA solder balls	European Commission proposed amendment to RoHS issued December 2003; 100 ppm homogeneous material threshold.
Lead	1000 ppm of homogeneous material	Lead-free products are below threshold, check product content by device name: Links...	European Commission proposed amendment to RoHS issued December 2003; 100 ppm homogeneous material threshold.
Mercury		Not used	
Hexavalent Chromium			
Polybrominated biphenyls (PBB)			
Polybrominated diphenyl ethers (PBDE)			

[top](#)

## RoHS / WEEE and Related Legislation

### I. EU RoHS (Restriction of certain Hazardous Substances) Directive

Beginning July 1st, 2006, any new electrical or electronic equipment containing the hazardous substances (Pb, Cd, Cr+6, Hg, PBBs and PBDEs), restricted in accordance with the Directive, is banned in the market.

RoHS (Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment)'s aim is simple - to restrict the use of **six substances** within electrical and electronic equipment (EEE), thereby contributing to the protection of human health and the environment. Although RoHS is a European Union (EU) Directive, manufacturers of EEE outside Europe must also abide by this legislation if the equipment they produce is ultimately imported into a EU member state.

### II. EU WEEE (Waste Electrical and Electronic Equipment) Directive

The Waste Electrical and Electronic Equipment (WEEE) Directive, enacted by the efforts of the EU Executive Committee and the European Parliament, defines extended producer responsibilities of recovering and recycling a certain ratio of the waste electrical and electronic products that are not incinerated and buried after use. The directive is applied to electrical and electronic equipments ranging from household appliances to IT and communication equipment.

The ratio of recovery, re-use and recycling is defined by each major electrical and electronic product. Electrical and electronic products of each supplier that complies with this ratio are allowed for sale in EU.

For more detail information on WEEE, refer to the link below.

### III. Links

- RoHS Directive : [http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l\\_037/l\\_03720030213en00190023.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_037/l_03720030213en00190023.pdf)
- WEEE Directive : [http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l\\_037/l\\_03720030213en00240038.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_037/l_03720030213en00240038.pdf)
- ELV Directive : [http://europa.eu.int/eur-lex/en/consleg/pdf/2000/en\\_2000L0053\\_do\\_001.pdf](http://europa.eu.int/eur-lex/en/consleg/pdf/2000/en_2000L0053_do_001.pdf)
- European Commission FAQs on WEEE and RoHS : [http://europa.eu.int/comm/environment/waste/pdf/faq\\_weee.pdf](http://europa.eu.int/comm/environment/waste/pdf/faq_weee.pdf)

## Eco-Product Status

All types of Pb-free memory/S-LSI products were qualified and under mass production.

## RoHS-complaint Product Qualifications and Production Status for Memory Products

### Memory Components

Product Families	Qualified Product	Comment
Component (Plastic Package, Substrate Package)	TSOP	Under mass production
	SOJ, SOP, DIP	Under mass production
	WSOP, QDP	Under mass production
	TQFP, LQFP	Under mass production
	WBGA	Under mass production
	FBGA, PBGA	Under mass production

### Memory Module Components

Product Families	Qualified Product	Comment
Module	SODIMM(Sync/DDR Unbuffer)	Under mass production
	RIMM	Under mass production
	Sync DIMM (Buffered/Unbuffered)	Under mass production
	DDR DIMM (Buffered/Unbuffered)	Under mass production
	Card(Memory Stick)	Under mass production
Card	xD card, RSMMC, MMC COB	Under mass production

## RoHS-complaint Product Qualifications and Production Status for System LSI Products

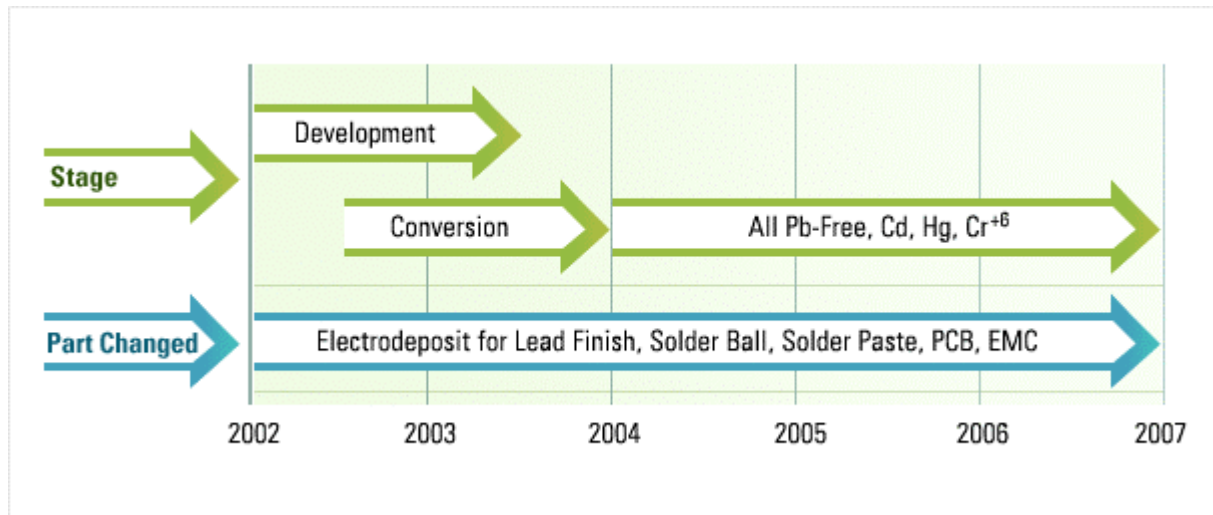
### System LSI Components

Product Families	Qualified Product	Comment
QFP/ LQFP	100, 128, 240/ 64, 144,160,208,256	Under mass production
TQFP	80,100	
Others	64WQFP, 64ELP	

BGA/ HBGA/ FBGA	272_2L/4L,304,492/480/64,144,256,272	
BGA	272/484BGA,176CABGA,144/160/208TBGA	Under mass production
Others	83TALGA	
QFN	24	Under mass production
FBGA	144FBGA	Under mass production
SOP	20/28/32SOP, 20SSOP	Under mass production
QFP	48QFP, 48LQFP	
L/F	8SOP, 8DIP	Under mass production

## Eco-Product Road Map

### RoHS compliant Product Roadmap & Target



[Note] 'All Pb-Free'(from 2004~) means that it is available upon customer's request to provide both Pb and Pb-free products.

### Selection of Materials Summary

#### Lead frame type Package

Lead finish

#### Ball type Package

Solder ball

- Material : Sn-Bi lead free plating (spec: Bi contents :1~4%)
- Evaluation : PPF/Sn-Ag/Sn

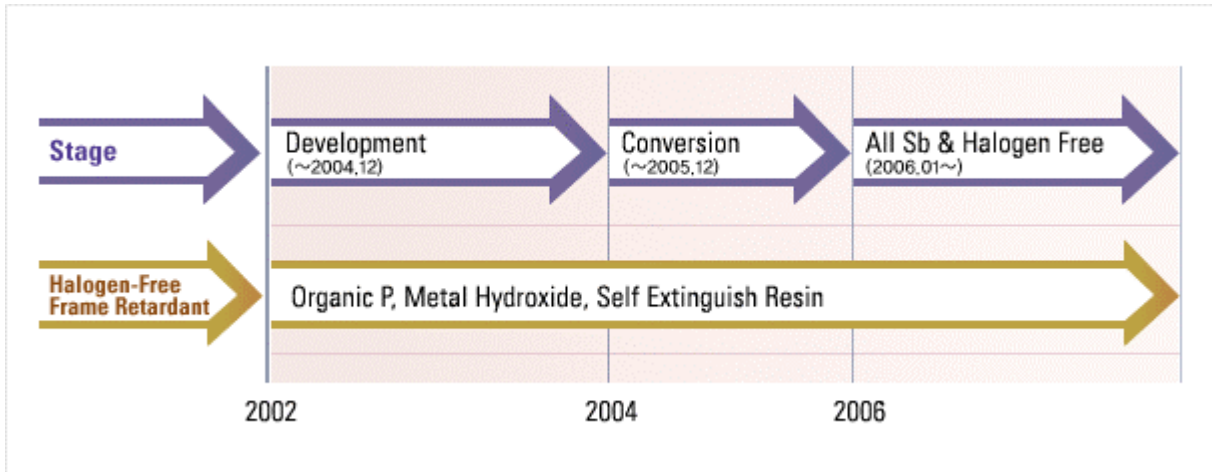
- Material : Sn-3.0Ag-0.5Cu
- Evaluation : Sn-Ag / Sn-Ag-Bi-Cu / Sn-Cu

### Memory Module

Solder paste

- Material : Sn-3.0Ag-0.5Cu
- Evaluation : Sn-Ag

### Halogen-free Product Roadmap & Target



[Note] 'All Sb & Halogen-Free'(from 2006.01~) means that it is available upon customer's request to provide Sb and Halogen-free products.