

### Environmental Policy

Philips Semiconductors is a global company committed to achieving a leading competitive position in the electronics industry through continuous improvements in product innovation, manufacturing excellence, customer service and environmental protection.

Environmental protection is an integral part of our business policy and is based on four principles:

- > Sustainable development - development of products and processes that have minimal effect on the quality of the environment today and in the future.
- > Prevention is better than cure.
- > The total effect on the environment is what counts - embodied in the development of products whose production (including energy usage), operation and disposal at end of life have minimal adverse effect on the environment.
- > Open contact with the authorities and customers.

As a leading manufacturer of integrated circuits and discrete semiconductors, Philips Semiconductors regards environmental protection as a major issue. In contrast to many industries, semiconductor manufacture uses relatively few toxic and hazardous materials. Nevertheless it is always our policy to follow working practices that reduce to the absolute minimum any chance of these materials passing into the environment. Every opportunity is taken to refine our manufacturing processes to reduce energy and water consumption and produce as little impact on the surroundings as possible.

### Certification

Philips Semiconductors was among the first companies in the world to implement certifiable Environmental Management Systems in line with the ISO 14001 environmental standard. We expect all of our manufacturing centres to be certified before 1999.

We were also one of the first international companies to introduce an internal Environmental Network meeting ISO 14001 requirements.

### ISO 14001

The essential elements of an Environmental Management System meeting ISO 14001 requirements are:

- > An organisation and well-defined procedures for handling environmental issues.
- > Clearly-defined areas of responsibility within the organisation and a framework for setting up and reviewing environmental objectives.
- > Awareness of environmental factors plus a clear improvement plan prioritising actions on reducing environmental impact.
- > A published policy of continuous improvement on environmental issues.

As with Quality standards, companies must be periodically audited, usually by an external party, to verify that they are complying with the requirements.

### Gaining certification

As part of the process of gaining environmental certification such as ISO 14001, the headings below describe just some of the work carried out by the Philips Semiconductors sites worldwide.

#### REDUCING HAZARDOUS MATERIALS

Examples of work carried in this area include:  
Replacing nickel leadframes by copper leadframes to reduce the quantity of nickel passing into the environment, both in production and at end-of-life disposal;  
Research into finding suitable alternatives to antimony and bromine which are used as flame retardants in semiconductor encapsulations;  
Finding suitable alternatives to toxic beryllia in semiconductors, for example aluminium nitride.

#### INVOLVING PARTNERS

We require our suppliers and subcontractors to be environmentally responsible, to have their own environmental policy and improvement plans and to record environmental information on all raw materials supplied to us. Future preferred suppliers will also be required to have ISO 14001 certification.

#### LOW-POWER DESIGNS

Continuing developments in our power semiconductors and integrated circuits produce more efficient operation, leading to lower power dissipation, cooler operation and lower drain on the power supply. This pays dividends whatever the power source. In the case of battery power, fewer batteries mean fewer problems from battery disposal.

#### CUTTING ENERGY CONSUMPTION

Efforts have been made and are ongoing to reduce energy consumption within the company. The overall goal is to improve the efficiency of energy consumption by 25% before the year 2000.

Energy-saving programmes include:  
Maintaining clean-air conditions at the work surface by the use of mini-environments within clean-rooms. This can lead to reductions of up to 60% in clean-room energy usage;  
Replacing old inefficient lighting with new equipment which uses electronic ballasts and controls;  
Making the workforce aware of good energy-saving practices which are as relevant in the home as they are in the workplace.

#### REDUCING CHEMICAL EMISSIONS

Efforts are constantly in progress to reduce chemical emissions. These efforts include:  
Improvements to manufacturing processes to reduce the emissions of perfluorinated compounds and volatile organic compounds;  
Alternatives introduced for damaging organic materials like ethyl glycol ethers and methanol in photo-lithographic processes.

## Thyristors and Triacs

## The Environment

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### ODC-FREE

In the elimination of ozone-depleting chemicals from its production processes, Philips Semiconductors can claim major successes. As early as May 1993, all plants had eliminated chloro-fluorocarbons (CFCs) from their manufacturing processes. This led the way to a complete phasing out of all Class I and Class II ODCs (listed in the 1986 Montreal Protocol) from our products and manufacturing processes in compliance with the US Clean Air Act.

### RECYCLING

Chemicals and water used in production processes are cleaned and recycled for re-use where, previously, they would have been disposed of. In some cases where we cannot re-use waste materials in our manufacturing processes, they are still of sufficient purity for other industries who buy them for their own manufacturing processes.

Examples of waste product re-use are:

Supplying cleaned water from production processes for landscaping irrigation and for supporting other local industries;

Supplying reject wafers to the aluminium industry to be used as pure silicon additives during aluminium smelting; Re-using sulphuric acid in-house for cleaning furnace tubes and supplying it to third parties for use in electroplating;

The recycling and re-use on-site of solvents such as acetone, isopropanol and N-methyl pyrrolidone.

### PAPER AND CARDBOARD REDUCTION

Our parent company has set a target to reduce the volume of paper and cardboard used in packing materials by 15%

by the year 2000. Philips Semiconductors has already passed this target by 1997 with a reduction over the previous 3 years of more than 20%.

### REDUCED ENVIRONMENTAL IMPACT OF PACKING

We are reducing the impact of used packing material on the environment by promoting recycling. To make this easier we have switched to "mono material" (for example, from aluminium-lined boxes to carbon-coated boxes)

Other measures include:

Switching from two-piece to one-piece boxes;

Changing from boxes of white cardboard (which require bleach in manufacture) to brown recycled cardboard; Using water-based inks (without heavy metals) for marking.

All parts are marked with recycling symbols and the material used (for example, "PVC" in the case of plastic device tubes).

We actively promote re-use of reels and trays used for discrete semiconductors and integrated circuits. This is helped by marking the boxes with labels giving an address to contact to arrange collection of used reels and trays. Philips is also cooperating with other manufacturers to establish global standards for these materials.

As a result of these actions, our new packing designs are easier to recycle, use less material and are nearly 40% lighter than old designs.

### SEMICONDUCTOR CONTENT

We were the first semiconductor manufacturer to publish full details of the chemical content of its products and packaging. This assists manufacturers who wish to evaluate the environmental impact from initial purchase to end-of-life disposal of using our products.

SUNSTAR 商斯达实业集团是集研发、生产、工程、销售、代理经销、技术咨询、信息服务等为一体的高科技企业，是专业高科技电子产品生产厂家，是具有 10 多年历史的专业电子元器件供应商，是中国最早和最大的仓储式连锁规模经营大型综合电子零部件代理分销商之一，是一家专业代理和分销世界各大品牌 IC 芯片和电子元器件的连锁经营综合性国际公司，专业经营进口、国产名厂名牌电子元件，型号、种类齐全。在香港、北京、深圳、上海、西安、成都等全国主要电子市场设有直属分公司和产品展示展销窗口门市部专卖店及代理分销商，已在全国范围内建成强大统一的供货和代理分销网络。我们专业代理经销、开发生产电子元器件、集成电路、传感器、微波光电元器件、工控机/DOC/DOM 电子盘、专用电路、单片机开发、MCU/DSP/ARM/FPGA 软件硬件、二极管、三极管、模块等，是您可靠的一站式现货配套供应商、方案提供商、部件功能模块开发配套商。商斯达实业公司拥有庞大的资料库，有数位毕业于著名高校——有中国电子工业摇篮之称的西安电子科技大学（西军电）并长期从事国防尖端科技研究的高级工程师为您精挑细选、量身订做各种高科技电子元器件，并解决各种技术问题。

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