



## **An open letter to our customers and suppliers**

The European Union (E.U.) recently passed into law the Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive, which will ban the use of four metals and two flame retardants in electronic products sold in Europe beginning July 1, 2006. Other governments including China and Japan are enacting similar legislation and in the United States, California is also in the process of adopting similar requirements.

The company has formed a "Green Product Committee" that has developed a road map to ensure that we comply with applicable legal and regulatory standards for the protection of the environment. This includes but is not limited to:

- Development of products that are safe to use and make efficient use of resources that can be reused, recycled and disposed of safely.
- The appointment of competent people to assist us in meeting RoHS compliance and our statutory duties in the case of subsidiary European companies as well as specialist from outside the corporation.
- Investigation of our supply chain to ensure manufacturing processes and systems are in line with our Company Compliance Schedule for RoHS compliant fabrication.
- Working with our customers to ensure the minimum of disruption in the implementation of this Directive.

Environmental concerns about Lead are forcing its removal from electronics and computing products. The technical solutions for manufacturing with high-temperature lead-free solder are still not fully solved, and the standards guiding compliance are still only in draft form.

The following pages provide an explanation of the RoHS Directive, as UNIPOWER understands it along with the schedule for compliance.

As the legislation and associated standards continue to develop some aspects and timetables may change and the information contained within these pages altered to reflect these factors.

There is much work to be done before the RoHS legislation is enacted on July 1, 2006; but when that day arrives UNIPOWER will be ready to do its part in protecting our planet.

**Joe Merino**  
**Vice President UNIPOWER**  
**Corporation October 2004**

## **BACKGROUND TO RoHS**

The European Parliament and the Council of the European Union issued Directive 2002/95/EC on the 27<sup>th</sup> January 2003.

This Directive covers the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

The purpose of the Directive is to approximate the laws of Member States in this field and to contribute to the protection of human health and the environmentally sound recovery and disposal of waste electrical and electronic equipment.

## **THE DIRECTIVE**

Article 2 of the directive sets out the scope.

This is primarily concerned with household appliances, consumer equipment, lighting equipment, electrical and electronic tools, toys, leisure & sports equipment, automatic dispensers and IT & telecommunications equipment.

The Directive does not apply to spare parts for repair, or to the reuse of, electrical and electronic equipment put on the market before 1st July 2006.

The IT and telecommunications equipment is defined in three categories:

- Centralised data processing
- Personal computing
- User terminals and systems

Article 4 concerns prevention and requires Member States to ensure that from 1st July 2006 new electrical and electronic equipment put on to the market shall not contain hazardous substances as defined in the Directive.

Article 4 also allows exemptions to the requirements of the Directive in areas where the scope includes commercial and infrastructure equipment. This includes lead in solders for servers, storage & storage array systems, network infrastructure equipment for switching, signaling or transmission as well as network management for telecommunications.

Article 5 recognizes the adaptation to scientific and technical progress to allow amendments to the Directive from time to time.

Article 9 required Member States to bring into force the laws, regulations and administrative provisions necessary to comply with the directive before 13<sup>th</sup> August 2004.

All Member States did not comply with Article 9 and, at best, draft regulation had been published. Most States had issued consultation documents by this date.

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## RoHS Defined

The RoHS Directive bans the use of six hazardous materials. The materials are four metals:

- Lead 0.1% max.
- Cadmium 0.01% max.
- Hexavalent Chromium 0.1% max.
- Mercury 0.1% max.

and two brominated flame-retardants:

- Polybrominated biphenyls (PBB) 0.1% max.
- Polybrominated diphenyl ethers (PBDE) 0.1% max.

Typical items that may contain one or some of the above are as follows:

- Lead: Printed circuit board finishes, component lead tinning, wire tinning, solder.
- PBDE/PBB: Wire sleeve, other component sleeve, plastic film capacitors, connectors.

The limits are defined as applying to individual “homogeneous” materials within a product.

## DEFINITION OF HOMOGENEOUS MATERIAL

A dictionary definition of Homogeneous is “consisting of parts all of the same kind”.

Government guidance notes published by the United Kingdom Department of Trade and Industry in July 2004 expand on this definition for the purposes of the RoHS Directive as follows:

“Homogeneous material” means a material that cannot be mechanically disjointed into different materials. The term ‘homogeneous’ is understood as “of uniform composition throughout”, so examples of “homogeneous materials” would be individual types of plastics, ceramics, glass, metals, alloys, paper, board, resins and coatings.

The term “mechanically disjointed” means that the materials can be, in principle, separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.

Using these interpretations, a plastic cover (for example) would be a “homogeneous material” if it consisted exclusively of one type of plastic that was not coated with or had attached to it (or inside it) any other kinds of materials. In this case, the maximum concentration values of the RoHS Regulations would apply to the plastic. On the other hand, an electric cable that consisted of metal wires surrounded by non-metallic insulation materials would be an example of something that is not “homogeneous material” because mechanical processes could separate the different materials. In this case the maximum concentration values of the RoHS Regulations would apply to each of the separated materials individually.

A semi-conductor package (as a final example) would contain many homogeneous materials, which include the plastic moulding material, the tin electroplating coatings on the lead-frame, the lead-frame alloy and the gold bonding wires.



## European Union's Technical Adaptation Committee (TAC)

Both the definition of "homogeneous material" and the proposed limits are subject to ratification by the European Union's Technical Adaptation Committee (TAC), which is responsible for the content of the Directive.

A meeting of the committee at the end of October 2004 is scheduled to discuss and agree on these aspects as well as to consider further exemptions that have been proposed.

### UNIPOWER's Compliance Schedule

UNIPOWER will utilize a phased implementation toward RoHS compliance.

#### ***Phase 1 – Scheduled Completion December 2004***

Product Disposition\*, Components and Business  
Systems Component Identification, Substitutions,  
Qualifications Supplier Compliance  
MIS System Upgraded to Ensure Compliance

#### ***Phase 2 – Scheduled Completion June 2005***

Product Transition Board  
Finishes  
Modules  
Documentation  
Marking and Identification

#### ***Phase 3 – Scheduled Completion December 2005***

Process  
Transition Solder  
Paste Wave  
Solder bath

\*Non standard and custom products may have varying dispositions of compliance specific to customer requirements and/or applications.

All new products commencing the design cycle with effect from 1<sup>st</sup> October 2004 will employ exclusively RoHS compliant components.