

Review of the European Commission's proposal for a revised version of Directive 2002/95/EC (RoHS)

Summary

This document examines the key aspects of the revised version of RoHS scheduled for late 2010. Particular attention is given to changes affecting the scope of the Directive, new substance restrictions, and new measures required to demonstrate conformity. An overview of the current version of RoHS is also provided.

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1. Overview of Current RoHS Directive

1.1 Background

Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) restricts the use of six classes of hazardous substances in electrical and electronic equipment (EEE) placed on the European market.

The ban of four heavy metals (lead, cadmium, mercury, hexavalent chromium) and two categories of brominated flame retardants (PBBs and PBDEs) in EEE entered into force on **1 July 2006**, although certain applications of these substances have been temporarily exempted until their substitution becomes scientifically and technically feasible.

RoHS applies to those who manufacture and sell EEE within the EU. It is also highly relevant to those who import electrical goods into the EU, and to those who re-brand equipment produced by others.

1.2 Scope of the RoHS Directive

The scope of RoHS is taken from Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). RoHS applies to EEE which falls into either category 1, 2, 3, 4, 5, 6, 7 or 10 of WEEE Annex IA (RoHS Article 2). These categories are:

1. Large household appliances
2. Small household appliances
3. IT and telecommunications equipment
4. Consumer equipment
5. Lighting equipment
6. Electrical and electronic tools (with the exception of large-scale stationary industrial tools)
7. Toys, leisure and sports equipment
10. Automatic dispensers

The Directive does not apply to spare parts for the repair, or to the reuse, of EEE placed on the market before 1 July 2006 (RoHS Article 2).

The above categories are interpreted extremely broadly by EU Member States; each category covers many different types of electronic equipment. Examples of specific types of electronic equipment which fall in to each of the above categories can be found in the WEEE Directive (Annex IB). It is important to remember that these examples are intended to be indicative rather than exhaustive. The absence of a

particular type of electronic equipment from these lists does not necessarily mean the equipment is outside the scope of the Directive.

EEE is defined as equipment which is dependent on electric currents or electromagnetic fields in order to work properly, and also equipment for the generation, transfer and measurement of such currents and fields, and designed for use with a voltage rating not exceeding 1 000 volts for alternating current and 1 500 volts for direct current (Article 3).

1.3 Restrictions Under RoHS

RoHS requires that new EEE placed on the market does not contain Lead, Mercury, Cadmium, Hexavalent Chromium, Polybrominated biphenyls or Polybrominated diphenyl ethers above certain permitted concentrations (see table below). These restrictions have been in place since **1 July 2006** (Article 4).

Substances Restricted	Maximum Permitted Concentration
Lead	0.1% or 1000ppm (w/w)
Mercury	0.1% or 1000ppm (w/w)
Cadmium	0.01% or 100ppm (w/w)
Hexavalent Chromium	0.1% or 1000ppm (w/w)
Polybrominated biphenyls	0.1% or 1000ppm (w/w)
Polybrominated diphenyl ethers	0.1% or 1000ppm (w/w)

The permitted concentration limits apply to individual homogeneous components of equipment, rather than to the equipment as a whole. Therefore, the key issue is whether any of the homogeneous components which make up electrical equipment contain any of the restricted substances above the permitted concentrations.

1.4 Exemptions from RoHS

The RoHS Directive allows manufacturers of EEE to use restricted substances for specific applications where there are currently no alternatives; where the alternatives are scientifically impracticable; or where the negative environmental, health and/or consumer safety impacts caused by substitution are likely to outweigh the benefits. The exempt applications of the six restricted substances can be found in the Annex to RoHS.

The exemptions are not intended to be permanent and are reviewed by the European Commission on a regular basis. Pursuant to Article 5(1)(c) each exemption listed in the Annex must be reviewed, at least

every four years (or four years after the exemption is added to the list) with the aim of considering deletion.

On reviewing the validity of existing exemptions and/or considering new exemptions, the European Commission is obliged to consult producers of EEE, environmental organisations, and employee and consumer associations. The latest review of the RoHS exemptions was performed by the Öko-Institut (on behalf of the European Commission) and was published on 20 February 2009.

1.5 Amendments to RoHS

Article 5 states that any amendments which are necessary to adapt RoHS to scientific and technical progress should be adopted. The following legislation has amended RoHS since its inception in 2003:

Legislation	Brief Description of Amendment
Commission Decision 2005/618/EC	Established maximum permitted concentration values for the six restricted substances
Commission Decision 2005/717/EC	New exemptions including deca BDE in polymeric applications* and lead in lead-bronze bearing shells and bushes
Commission Decision 2005/747/EC	New exemptions for various uses of lead
Commission Decision 2006/310/EC	New exemptions for various lead compounds
Commission Decision 2006/690/EC	New exemptions for specific uses of lead bound in crystal glass
Commission Decision 2006/691/EC	New exemptions for various uses of lead and cadmium compounds
Commission Decision 2006/692/EC	New exemption for use of hexavalent chromium in corrosion preventive coatings and certain electromagnetic interference shielding (Note: This exemption has now expired)
2008/35/EC	Amended wording of Article 5
Commission Decision 2008/385/EC	New exemptions for specific uses of lead and cadmium products
Commission Decision 2009/428/EC	New exemption for lead as an impurity in certain Faraday rotators used for fibre optic communication systems
Commission Decision 2009/443/EC	New exemptions for specific uses of lead, mercury and cadmium.

*On 1 April 2008, the European Court of Justice annulled Commission Decision 2005/717/EC exempting deca BDE from the use restriction under the RoHS.

1.6 Demonstrating Compliance with RoHS

The current RoHS Directive does not refer to specific compliance procedures, certificates or testing methods to be used in order to demonstrate compliance. Therefore, EU Member States are fully responsible for setting compliance rules. This means precise laws may vary slightly between different EU Member States. As a minimum, a self declaration of compliance will undoubtedly be required; many EU Member States also require data as evidence of compliance.

Example Member State: United Kingdom

The national law of the United Kingdom prohibits the placing of non-RoHS compliant EEE on the UK market. It is irrelevant if a company is unaware they are committing an offence, or if a company is unaware of their obligations under the RoHS Directive, the mere act of placing non-compliant EEE onto the market is sufficient to allow a UK Court to convict.

However, if a company can demonstrate it has taken *all reasonable steps* to avoid committing the offence, it may avoid prosecution. The Courts have yet to come up with a simple scheme to answer the question of what is *reasonable*.

Nevertheless, it is clear that some form of positive action is required. In the past some businesses have tried to suggest that because past dealings in a particular area of commerce had raised no problems, or because they had no reason to suspect problems, they could avoid prosecution. The Courts have been clear on this point; positive action is required, but the nature of that action will depend on the relevant circumstances.

You should consider the following:

Purely relying on certificates or other documentation without assessing their validity is unlikely to be considered as adequate if a business has refused or failed to take a reasonable precaution. What constitutes reasonable action depends on your business. It is recommended that all the activities of the business which may cause a breach of RoHS should be identified, controlled and checked by a system of working, for example;

- Supplier reliability and selection of raw materials and components
- Goods in control and quarantine
- Evidence and documentation
- Staff training and experience
- Sales, does your sales team know not to sell exempt product into non-exempt markets?

If sampling or testing is involved or appropriate, the number of tests you do should reflect:

- The amount of product involved
- The complexity of the product
- The size of the business

Any system that you devise must be appropriate to the size of your business and associated risk. The bigger you are, the more the law will expect you to do.

1.7 Penalties for Non-compliance

Article 8 of RoHS requires individual EU Member States to apply penalties to suppliers of non-compliant equipment. According to Article 8, EU Member States must ensure that the penalties imposed are effective, proportionate and dissuasive.

Powers conferred on Member State authorities responsible for the implementation of RoHS include the ability to enter premises and inspect records, make test purchases and require the production of compliance documents. Competent authorities may also perform analytical testing to assess compliance.

Member State authorities are also able to enforce compliance (e.g. by issuing a compliance notice requiring certain action to be taken and issuing an enforcement notice restricting, prohibiting and/or withdrawing non-compliant goods from the market).

If non-compliance is established, Member State authorities may prosecute producers in national Courts. In many Member States the maximum penalty on conviction is an unlimited fine. Furthermore, the courts often have the discretion to order that the non-compliant producer remedy the breach (if it is within his power to do so).

2. Overview of the European Commission's proposed updated version of RoHS

2.1 Background

On the 3 December 2008 the European Commission revealed plans to recast the RoHS Directive.

It is important to stress that these changes will affect all aspects of the electronics industry. If your products have previously been classified as out-of-scope, they may now be included. Furthermore, if you already have RoHS compliant products, you will have additional tasks to address.

At present, this recast is simply a proposal and is not yet in force - the EU parliament and the Council must first formally agree its text before it enters the Official Journal. However, as this is a European Commission proposal based on two (industry) stakeholder consultations and several expert studies, it is highly likely it will become law.

Adoption of these proposals is likely to be around late 2010 and new rules will probably take effect between 2011 and 2012.

The proposed changes are outlined in the following sections.

2.2 Changes to the scope of RoHS

The proposed version of RoHS no longer relies on the WEEE Directive for its scope. The existing 10 categories of EEE from the WEEE Directive are to be incorporated into RoHS.

As a consequence, the scope of RoHS is set to cover two new product categories; Medical Devices and Monitoring and Control Instruments (RoHS recast proposal, Article 4.3).

The restriction of substances in these categories will be implemented in a staged manner in order to minimise disruption. The Commission recognises manufacturers of medical equipment and monitoring and control equipment will take longer to adjust as more extensive product testing is required before a substitution can be deemed acceptable. The following deadlines are scheduled for the restriction of EEE falling into these categories (RoHS recast proposal, Article 4):

Type of EEE	Proposed date of restriction
Medical devices	1st January 2014
In vitro medical devices	1st January 2016
Monitoring and control instruments	1st January 2014
Industrial monitoring and control instruments	1st January 2017

A new Annex with exemptions specific to the new categories will be added for cases where substitution is currently not feasible (RoHS recast proposal, Annex VII).

The updated version of RoHS will now specifically exempt EEE which is:

1. Necessary for the protection of the essential interests of the security of Member States, including arms, munitions and war material intended specifically for military purposes.
2. Specifically designed as part of another type of equipment that does not fall within the scope of RoHS and can fulfill its function only if it is part of that equipment.
3. Not intended to be placed on the market as a single functional or commercial unit.

Whilst not mentioned in the current version of RoHS, military equipment and equipment which forms part of other equipment outside the scope of RoHS are usually considered to be outside the scope of RoHS on the basis that they are outside the scope of the WEEE Directive.

2.3 New Substances Restrictions

No new substances have been added to the six substances currently restricted. However, the proposed Directive has identified 4 substances of high concern (RoHS recast proposal, Annex III). These substances (see table below) have been identified for priority assessment with a view to inclusion in the list of restricted substances at some stage.

Substances Selected for Potential Restriction Under RoHS	Common Use(s)
Hexabromocyclododecane (HBCDD)	Flame retardant
Bis (2-ethylhexyl) phthalate (DEHP)	Plasticizer in PVC, dielectric for capacitors
Butyl benzyl phthalate (BBP)	Plasticizer in PVC
Dibutylphthalate (DBP)	Plasticizer in adhesives and certain printing inks

2.4 New Definitions

The permitted concentration limits imposed under RoHS apply to individual homogeneous components of equipment, rather than to the equipment as a whole. The current version of RoHS does not contain a definition of "homogeneous material." However, this issue has been addressed in Article 3 of the proposed RoHS recast where "homogeneous material" is defined as:

"A material of uniform composition throughout that cannot be mechanically disjointed into different materials, meaning that the materials cannot, in principle, be separated by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes"

The term "producer" of EEE has been removed from the proposed update. The recast now defines "Manufacturers", "Importers", "Distributors" and "Authorised Representatives" separately (see Section 2.5).

2.4 New Conformity assessment requirements and market surveillance mechanisms

The current version of RoHS does not place obligations on manufacturers to document evidence of compliance. Any current requirements for documentary evidence come from member state enforcement authorities and not from the RoHS Directive itself.

However, Article 7 of the proposed recast requires that once the necessary compliance measures are in place (See Section 2.5), manufacturers draw up an EC declaration of conformity and subsequently affix the CE marking to the EEE as a means of demonstrating compliance (Note: The revised version of RoHS is not yet in force; placing CE marks on products which do not require them is contrary to European Law). The CE marking will be subject to the general principles set out in Article 30 of Regulation (EC) No 765/2008 (RoHS recast proposal, Article 14).



The CE Mark: Labelling EEE with the CE mark looks set to become an obligation under the revised version of RoHS.

This is a significant change from the current version of RoHS. Many companies placing EEE onto the European Market may currently be RoHS compliant; however, they may not comply with all the requirements imposed by the CE standard.

Under the proposal Member States will carry out market surveillance, in accordance with Articles 15-29 of Regulation (EC) No 765/2008. The introduction of compulsory CE marking also introduces another enforcement agency responsible for RoHS, thus strengthening market surveillance and increasing the possibility suppliers of non-compliant EEE will be prosecuted.

2.5 New obligations targeting specific members of the supply chain.

The new version of RoHS defines “Manufacturers”, “Importers”, “Distributors” and “Authorised Representatives” separately:

Economic Operator	Definition
Manufacturer	Any natural or legal person who manufactures EEE or who has EEE designed or manufactured under his name or trademark.
Distributor	Any natural or legal person in the supply chain, other than the manufacturer or importer, who makes EEE available on the market.
Importer	Any natural or legal person established within the Community, who places EEE from a third country on the Community market.
Authorised Representative	Any natural or legal person established within the Community who has received a written mandate from a manufacturer to act on his behalf in relation to specified tasks.

Under the proposal, individual members of the supply chain will have a specific set of obligations. These are summarised in the proceeding sections.

2.5.1. Proposed Obligations on Manufacturers

Manufacturers placing EEE onto the European will have the following obligations (RoHS recast proposal, Article 7):

- Manufacturers will be required to ensure the EEE has been designed and manufactured in such a manner that compliance with the Directive is assured. Where compliance with the applicable requirements has been demonstrated, manufacturers will be required to draw up an EC declaration of conformity and affix the CE marking.
- Manufacturers must ensure procedures are in place for series production to remain in conformity. When deemed appropriate with regard to the risks presented by a product, manufacturers will need to: protect the health and safety of consumers, carry out sample testing of marketed EEE, investigate, and, if necessary, keep a register of complaints, of non-conforming EEE and product recalls (and keep distributors informed of all such monitoring).
- Manufacturers who consider or have reason to believe that EEE which they have placed on the market is not in conformity with the applicable Community harmonisation legislation must immediately take the necessary corrective measures to bring that EEE into conformity, to

withdraw it or recall it, if appropriate. Furthermore, where the EEE presents a risk, manufacturers shall immediately inform the competent national authorities of the Member States in which they made the EEE available to that effect, giving details, in particular, of the non-compliance and of any corrective measures taken.

- Manufacturers shall, further to a reasoned request from a competent national authority, provide it with all the information and documentation necessary to demonstrate the conformity of the EEE, in a language which can be easily understood by that authority. They shall cooperate with that authority, at its request, on any action taken to eliminate the risks posed by EEE which they have placed on the market.

2.5.2. Proposed Obligations on Authorised Representatives

According to Article 8 of the proposed Directive, manufacturers may, by a written mandate, appoint an Authorised Representative. Authorised Representatives will be required to perform the tasks specified in the mandate received from the manufacturer. The mandate shall allow the authorised representative to do at least the following (RoHS recast proposal, Article 8):

- Keep the EC declaration of conformity and the technical documentation at the disposal of national surveillance authorities for ten years.
- Further to a reasoned request from a competent national authority, provide that authority with all the information and documentation necessary to demonstrate the conformity of EEE.
- Cooperate with the competent national authorities, at their request, on any action taken to eliminate the risks posed by EEE covered by their mandate.

2.5.3. Proposed Obligations on Importers

Under Article 9 of the proposed recast importers will have the following obligations placed on them:

- Importers must ensure that the manufacturer has drawn up the technical documentation, that the EEE bears the CE marking and is accompanied by the required documents, and that the manufacturer has complied with all relevant requirements (see above).
- Where an importer has reason to believe EEE is not in conformity with RoHS, the importer must not place that EEE on to the market (until it has been brought into conformity). Furthermore, where the EEE presents a risk, the importer shall inform the manufacturer and the market surveillance authorities to that effect.

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- Importers must ensure that, whilst EEE is under their responsibility, storage or transport conditions do not jeopardise its compliance with the requirements of RoHS.
- When deemed appropriate with regard to the risks presented by an EEE, importers shall (in order to protect the health and safety of consumers) carry out sample testing of marketed EEE, investigate, and, if necessary, keep a register of complaints, of non-conforming EEE and EEE recalls, and shall keep distributors informed of such monitoring.
- Importers who consider or have reason to believe that EEE which they have placed on the market is not in conformity with this Directive must immediately take the corrective measures necessary to bring that EEE into conformity, to withdraw it or recall it, if appropriate. Furthermore, where the EEE presents a risk, importers shall immediately inform the competent national authorities of the Member States in which they made the EEE available to that effect, giving details, in particular, of the non-compliance and of any corrective measures taken.
- Importers must, for ten years, keep a copy of the EC declaration of conformity at the disposal of the market surveillance authorities and ensure that the technical documentation can be made available to those authorities, upon request.
- Importers must, further to a reasoned request from a competent national authority, provide it with all the information and documentation necessary to demonstrate the conformity of an EEE in a language which can be easily understood by that authority. They shall cooperate with that authority, at its request, on any action taken to eliminate the risks posed by EEE which they have placed on the market.

2.5.4. Proposed Obligations on Distributers

When making EEE available on the market distributors must act with due care in relation to the following requirements:

- Before making an EEE available on the market distributors shall verify that the EEE bears the CE marking, that it is accompanied by the required documents in a language which can be easily understood by consumers and other end-users in the Member State in which the EEE is to be made available on the market, and that the manufacturer and the importer have complied with the relevant requirements.
- Where a distributor considers or has reason to believe that EEE is not in conformity with the Directive, he shall not make the EEE available on the market until it has been brought into conformity. Furthermore, where the EEE presents a risk, the distributor shall inform the manufacturer or the importer to that effect as well as the market surveillance authorities.
- Distributors must ensure that, while an EEE is under their responsibility, storage or transport conditions do not jeopardise its compliance with the requirements set out in Article.
- Distributors who consider or have reason to believe that an EEE which they have made available on the market is not in conformity with this Directive shall make sure that the corrective measures necessary to bring that EEE into conformity, to withdraw it or recall it, if appropriate, are taken. Furthermore, where the EEE presents a risk, distributors shall immediately inform the competent national authorities of the Member States in which they made the EEE available to that effect, giving details, in particular, of the non-compliance and of any corrective measures taken.
- Distributors shall, further to a reasoned request from a competent national authority, provide it with all the information and documentation necessary to demonstrate the conformity of an EEE. They shall cooperate with that authority, at its request, on any action taken to eliminate the risks posed by EEE which they have made available on the market.

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