

European Union Directive 2000/53/EC

The European End-of-Life Vehicles (ELV) Directive (2000/53/EC) was finalized with the aim of preventing waste from vehicles, ensuring that reuse, recycling, and other recovery efforts are controlled and proceeding with the goal of reducing the overall volume of waste disposed. In the late 1980s and early 1990s, the European Union (EU) designated End-of Life Vehicles (ELVs) as a priority waste stream due to the increasing volume of waste produced by and the poor environmental performance of the vehicle scrap and recovery industry.

Requirements established by the ELV include:

Design for Environment/Recycling

- Vehicle Manufacturers (VMs) are to limit the use of hazardous substances.
- The design and production of new vehicles should take into account and facilitate the dismantling, reuse, and recovery of ELVs, their components, and materials.
- An increasing quantity of recycled materials should be integrated into vehicles.
- The use of cadmium, lead, mercury, and hexavalent chromium in new vehicles is to be eliminated for vehicles placed on the market by 1 July 2003 (exceptions are listed Annex II of the ELV Directive).

Reuse and Recycling

- VMs are to limit the use of hazardous substances.
- The reuse and recovery of all ELVs shall be increased to a minimum 85% (of which only 5% can be energy recovery) by an average weight per vehicle per year by 1 January 2006, and to a minimum of 95% (only 10% can be energy recovery) by 1 January 2015.
- For vehicles produced before 1 January 1980, lower reuse and recovery limits may be permitted, but not lower 75% (only 5% can be energy recovery).
- Component and material coding standards will be adopted to facilitate the identification of items suitable for reuse or recovery.

The International Material Data System (IMDS)

In order that sufficient and reliable data are available to make the meaningful product material and recyclability decisions necessary to support the ELV Directive and other requirements, BMW, DaimlerChrysler, Ford, General Motors, Porsche, Volkswagen, Volvo, Fiat, Mazda, Mitsubishi, Nissan, Subaru and Toyota and Electronic Data Systems (EDS) formed a consortium to capture vehicle composition data electronically with IMDS.

IMDS is an Internet-based collection system tied to a central database. Theoretically, each supplier loads data into IMDS and submits it to its customer where it is aggregate with supplied or self-made data. In this way, the complexity of the information grows, and finally a material data sheet representing the complex parts and vehicle systems are available to vehicle manufacturers which represent the entire Bill of Materials for each vehicle model. It allows:

- Automotive suppliers to create, process, and submit constituency data for their parts, and
- VMs to view, analyze, and download their data.

Although using IMDS is not a legal requirement, it should be understood that vehicle manufacturers are using this system to help them meet the requirements of the ELV Directive. For them to fulfill their legal requirement to the ELV Directive, vehicle manufacturers are using IMDS so its use has become a mandatory condition of business.

Materials that are worn off during use or manufacture are generally not required to be entered into the system but clarification needs to be gained by the vehicle manufacturer. The material composition data to be entered applies to:

- All component materials including metals, plastics, ceramics, natural products (e.g., leather, wood, paper), etc.
- Surface preparations and coatings present on the component in the finished vehicle.
- Substances actually present in the finished vehicle when sold.
- Residual process materials that remain in the finished vehicle.

Restriction of Hazardous Substances (RoHS)

On January 27, 2003, the European Parliament issued a directive “on the restriction of the use of certain hazardous substances in electrical and electronic equipment.” The RoHS directive became effective on July 1, 2006 and applies to new electrical and electronic equipment placed on the European market on or after July 1st. However, spare parts will continue to be available for products that were put on the market prior to that date. RoHS named six hazardous substances of immediate concern: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE). It also provides for the addition of other hazardous substances, as soon as scientific evidence is available.

The maximum concentration values tolerated for the RoHS substances were established by amendment in 2005. Values are measured by weight at the homogeneous material level. The maximum concentration value tolerated for lead, mercury, hexavalent chromium, PBB, and PBDE is 0.1% by weight in homogeneous materials and for cadmium is 0.01%. Covered electrical and electronic equipment includes any equipment that depends upon electric currents or electromagnetic fields for its operation. Large household appliances; small household appliances; IT and telecommunications equipment; consumer equipment; lighting equipment and light bulbs; electrical and electronic tools (except large-scale stationary industrial tools); toys, leisure and sports equipment; and vending machines are covered.

Exemptions may be granted to narrowly-defined applications when the elimination of a prohibited substance is technically or scientifically impracticable or when the only available substitution produces more negative than positive benefits to the environment, health, or consumer safety. Exemptions are temporary in nature and subject to review at least every four years, until such time as a reliable and safe substitution is available.

China's RoHS-like regulation of electrical and electronic products is based on the Law on the Promotion of Clean Production, which was adopted on June 29, 2002 and became effective on January 1, 2003. Accordingly, the Ministry of Information Industry (MII) issued Order #39: Measures for Administration of the Pollution Control of Electronic Information Products on February 29, 2006. The order was promulgated jointly with the Ministry of Commerce, the General Administration of Customs, the State Environmental Protection Administration (SEPA) and five other agencies with shared jurisdiction. There is no official English translation, but the Ministry of Commerce posted an

English translation to its website on May 9, 2006 "for reference only." Eleven categories of electronic information products are listed but the term is not legally defined. A list of covered products and equipment in the supporting "Electronic Information Products Classification and Explanations" is 35 pages long.

Unlike EU RoHS, China RoHS does not officially provide exemptions in situations where the elimination of hazardous substances is technically or scientifically impracticable or would produce negative environmental, health or safety impacts. However, the phase-in period for China RoHS provides such exemptions in practice.

Manufacturers and importers must determine the environment-friendly use period of products that contain toxic or harmful substances. This is the period during which the product may be safely used without leaking or mutation of the hazardous substances. The Chinese law took effect March 1 2007 with a deceptively simple labeling requirement. In the first phase of implementation, the products will have to carry a label, affixed by the manufacturer, that indicates whether they are compliant or not. Compliant products will carry a label with a green E in a circle. Non-compliant products will carry a label with an orange circle with a number in the middle, called an environmental protection use period (EPUP) number. The number would indicate how many years the equipment or product would last before it starts leaking the hazardous substances or causes other environmental problems. Equipment or products labeled with a 10, for example, would not cause any environmental problems for 10 years.



This is the symbol to show that a product does not contain any of the six restricted substances under China RoHS.



This Symbol says the product does not comply with China RoHS, but will not be a hazard to the environment for 10 years.

The marks must be displayed on the outside of shipping materials, and accompany documentation is required to be translated into simplified Chinese.

American Mitsuba Plan for Compliance

Producers and importers of products into the European Union are responsible for ensuring that their products comply with the regulations and that they maintain evidence of that compliance. China also has a regulation with similar restrictions. While Japan does not currently have any direct legislation, its recycling laws have spurred Japanese manufacturers to move to a lead-free process. South Korea is planning RoHS legislation by March 1, 2007. California has passed the Electronic Waste Recycling Act of 2003 (EWRA), which prohibits the sale of electronic devices after January 1, 2007 that do not comply with restrictions of the four heavy metals restricted by RoHS. EWRA also requires suppliers to provide evidence of compliance.

As you can see, RoHS is not the only environmental standard that electronic product developers need to be aware of.

Mitsuba, a global supplier for electronic motors and actuators, has taken the position to develop products that are compliant with RoHS by July 2007. In order to assure compliance, American Mitsuba and our suppliers must provide evidence, which includes measurement (PPM) of each of the six restricted materials.

The most cost effective way of analyzing the material is by utilizing the XRF (X-Ray Fluorescence) screening, which provides a spot analysis of the materials and components in your product. IMR Test Labs (www.imrtest.com) is an independent lab that is an ISO 17025 accredited laboratory through A2LA, who can perform this testing. IMR is also recognized by the National Aerospace and Defense Contractors Accreditation Program (NADCAP).

For future products and new business, AMC will require its suppliers to submit their products into IMDS and provide evidence of compliance to RoHS for approval 30 days prior to PPAP submission. Failure to do so may result in rejection of PPAP submission.

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