

Attracting Tomorrow



TDK-Lambda EMEA RoHS compliance

TDK-Lambda
A TDK Group Company
Power Systems Business Group (PSBG) • Environment
Europe, Middle East, Africa
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TDK-Lambda EMEA RoHS compliance

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Statement of Objectives

TDK-Lambda EMEA objectives will be to:

- Ensure that TDK-Lambda ACDC power supplies , DCDC converters and EMI filters comply with all applicable legal, regulatory and Corporate requirements and , if it is deemed appropriate , adopt more stringent standards for the protection of the Environment and the community in which we operate.
- Identify, monitor and minimize the Environmental impact associated with the manufacture of our power supplies, DCDC converters and EMI filters and seek to prevent any pollution from our operations.
- Develop ACDC power supplies, DCDC converters and EMI filters that are safe to use, make efficient use of resources, and which can be reused, recycled and disposed of safely.
- Appoint competent people to assist us in meeting our statutory duties including, where appropriate, specialists from outside the organization.
- Be frank and open, making this policy and our Environmental performance publicly available.

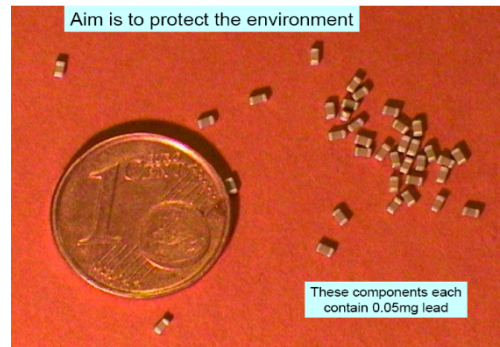
What is the RoHS Directive?

- A 'Single Market' Directive on the restriction of certain hazardous substances
- Seeks to reduce the environmental impact of EEE (electrical and electronic equipment) by restricting the use of certain hazardous substances during manufacture
- Reduces the costs of recycling EEE
- Complementary to the WEEE Directive
- Certain equipment is exempt - see End Equipment definitions

Current Legislative Requirements

- EU Directive 2011/65/EU (RoHS2) Restriction of Hazardous Substances and 2015/863/EU (RoHS10)
 - Updated from the original Directive 2002/95/EC
- EU Directive 2012/19/EU Waste Electric and Electronic Equipment (WEEE)
 - Updated from the original Directive 2002/96/EC

Why the need for RoHS directive?



All electronic equipment may contain some degree of hazardous substances including some or all of the following; lead, mercury, hexavalent chromium, cadmium, brominated compounds and phthalates. With the increasing proliferation of electronic equipment and its shorter lifecycles, more and more of this equipment finds its way into landfill sites. In the interests of the environment it is desirable to restrict the amount of hazardous substances that can accumulate.

Typical example of IT equipment

Source of lead	Quantity in one unit	Quantity in 1 million units
Lead in tin/lead solder	48 g	48 tonnes
Lead impurity in lead-free solder	0.02 g	20 kg
Lead from termination coating of one IC	0.0025 g	2.5 kg

Scope of Legislation - Europe

Restricted substances

The RoHS directive sets the Maximum Concentration Values (MCVs) by weight in homogenous materials for the restricted substances.

The original 2002 Directive established that from 1 July 2006, new electrical and electronic equipment put on the market should not contain the following in excess of the MCVs .

- Lead (0.1%)
- Mercury (0.1%)
- Hexavalent Chromium (0.1%)
- Cadmium (0.01%)
- Polybrominated Biphenyls (PBB) (0.1%)
- Polybrominated Diphenyl Ethers (PBDE) (0.1%)

The update 2015/863/EU (RoHS10) brings the number of hazardous substances listed in Annex II of RoHS 2 directive to 10.

- Di(2-ethylhexyl)phthalate (DEHP) (0.1%)
- Butyl Benzyl Phthalate (BBP) (0.1%)
- Dibutylphthalat (DBP) (0.1%)
- Diisobutylphthalat (DIBP) (0.1%)

The restriction of DEHP, BBP, DBP and DIBP with MCVs of 0.1% was adopted in March 2015 and effective from **22 July 2019** for EEE other than medical devices and monitoring and control instruments, and from 22 July 2021 for medical devices and monitoring and control instruments.

Note that these are all substances classified as SVHCs under the REACH Directive.

All TDK-Lambda power supplies, DCDC converters or filters offered on our website that fall within the scope of the RoHS Directive are CE marked to indicate compliance with both the RoHS Directive and the Low Voltage Directive.

Homogeneous materials

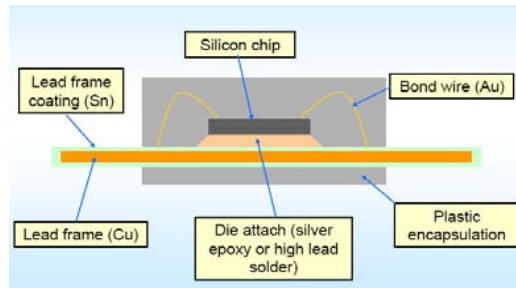
Homogeneous materials means “a unit that cannot be mechanically disjointed into different materials”

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

In other words components e.g. resistors, capacitors, semiconductor devices, connectors, plastic housing, wire, fasteners are not considered as homogeneous.

Materials e.g. lead frame coating, ceramic used in ceramic capacitors, plastic used in connectors and in housings, wire insulation, individual coating layers on fasteners are considered as homogeneous.

Component or Material?



The maximum concentration levels of restricted substances apply to each sub part of this component. The component is not considered as “**homogeneous material**” in itself.

End Equipment Definitions

Equipment covered under the scope of the RoHS Directive is as follows

“Electrical and electronic equipment falling under the categories 1, 2, 3, 4, 5, 6,7 and 10 set out in Annex 1A to Directive No 2002/ /EC (WEEE) and to electric light bulbs, and luminaires in households” Namely;

- 1. Large Household appliances
- 2. Small Household appliances
- 3. IT and telecommunications equipment
- 4. Consumer equipment
- 5. Lighting equipment
- 6. Electrical and electronic tools (except large scale stationary industrial tools)
- 7. Toys, leisure and sports equipment
- 8. Medical Devices including in vitro medical devices
- 9. Monitoring and control instruments including Industrial monitoring and control instruments
- 10. Automatic dispensers
- 11. Other EEE not covered by categories 1-10

There are a number of exemptions to this list which are detailed in the Annex of the RoHS 2 Directive. The Annex will also be reviewed periodically and amended from time to time.

InVitro Medical Devices (within Category 8) are exempt until 22 July 2016.

Industrial Monitoring and Control instruments (within Category 9) are exempt until 22 July 2017.

Category 11: Other EEE are exempt until 22 July 2019.

RoHS Directive – Definition of “Producer”

- A “Producer” will typically carry out some or all of the following activities
 - Manufactures and sells his own brand
 - Resells under his own brand
 - Imports or exports into the EU



Self-declaration

Self-declaration is a common method used for many new EU Directives

- Products placed on market would be presumed to comply with the RoHS Directive
- Enforced by market surveillance
- An enforcement authority may request evidence that a producer has used due diligence and taken “reasonable steps” to comply - usually by means of a Technical File containing at least 4 years records

Scientific Analysis of every “material” by the “Producer” of End Equipment would be unrealistic therefore producers will seek compliance statements from suppliers of “materials” and “components” and set up practical audit processes to ensure ongoing compliance.

Self Declaration TDK-Lambda Policy

- TDK-Lambda has a Self Declaration policy supported by Supplier declarations audited as required.
- TDK-Lambda Compliance Database was created Sept 04.
- TDK-Lambda EMEA has issued a new purchasing control document for all parts.
- TDK-Lambda validate our product BOMs through Greensoft Technology Inc (www.greensofttech.com), a leading provider of environmental compliance services. Currently TDK-Lambda have over 50000 parts under Greensoft data management.
- Regular vendor audits include compliance to RoHS.
- TDK-Lambda will also conduct in house verification testing using X ray fluorescence (XRF) equipment.

TDK-Lambda EMEA RoHS Certificate of Conformance Document

- All TDK-Lambda EMEA suppliers of relevant parts are required to complete and maintain this Master Document.

Verification Testing

- TDK-Lambda EMEA has invested in verification test equipment manufactured by Shimadzu comprising an Energy dispersive X-Ray Fluorescence spectrometer, Fourier Transform Infrared Spectrophotometer and UV spectroscopy system for on site verification of any component to the RoHS directive. TDK-Lambda will test components that it considers to fall into the following categories:
- High Risk:
 - A component supplied as compliant, but without any evidence supported either from 3rd party analysis or from the manufacturer that it complies to the directive.
 - A supplier or manufacturer of components or sub assemblies with either little, or no knowledge of the RoHS directive with no confirmed time scale for compliant components.
- Medium Risk:
 - A component supplied classed as RoHS compliant with supporting evidence provided by the manufacturer but not verified by an external 3rd party test facility
- Plastic parts :
 - We test parts with FTIR Spectrometer
- Metal parts :
 - We test parts with UV Spectrophotometer



XRF Spectrometer



FTIR Spectrometer



UV MINI Spectrophotometer

