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TDK- Lambda Europe and Environmental Responsibility

Statement of Objectives

TDK- Lambda Europe objectives will be to:-

- Ensure that TDK- Lambda power supplies , dc/dc 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 minimise the Environmental impact associated with the manufacture of our power supplies, dc/dc converters and EMI filters and seek to prevent any pollution from our operations.
- Develop power supplies , dc/dc 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 organisation.
- Be frank and open, making this policy and our Environmental performance publicly available.

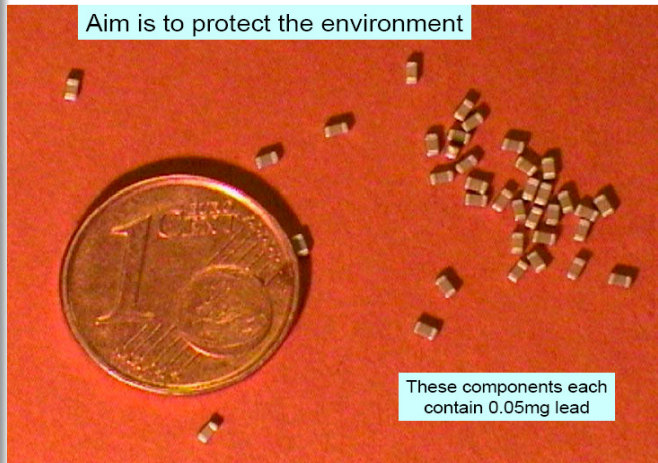
What is the RoHS Directive ?

- 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

Legislative Requirements

- EU Directive 2002/95/EC Restriction of Hazardous Substances (RoHS)
 - Compliance required by 1st July 2006
- EU Directive 2002/96/EC Waste Electric and Electronic Equipment (WEEE)
 - Compliance required by 13th August 2005 - in common with many other Member states the UK Government has encountered major practical difficulties in meeting the Directive's deadline and will therefore implement from 2 January 2007
- Recommended reading
 - The UK Government BERR published a useful set of RoHS Guidance Notes updated in July 2008 containing latest information including Exemptions recently approved by the European Commission . Please refer to the link published on our website .

Why the need for RoHS directive?



Typical example of IT equipment

All electronic equipment contains some degree of hazardous substances including some or all of the following ; lead , mercury , hexavalent chromium , cadmium and brominated compounds

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

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 materials :

The current review of the RoHS directive aims to set official guidance on the level of acceptable impurities for the banned substances.

From 1 July 2006, new electrical and electronic equipment put on the market should not contain

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

Maximum Concentration Values (MCVs) :

The MCVs given below were written into the Official Journal of the European Commission on 18 August 2005 :

“A maximum concentration of 0.1% by weight in homogeneous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) and of 0.01% by weight in homogeneous materials for cadmium shall be tolerated”

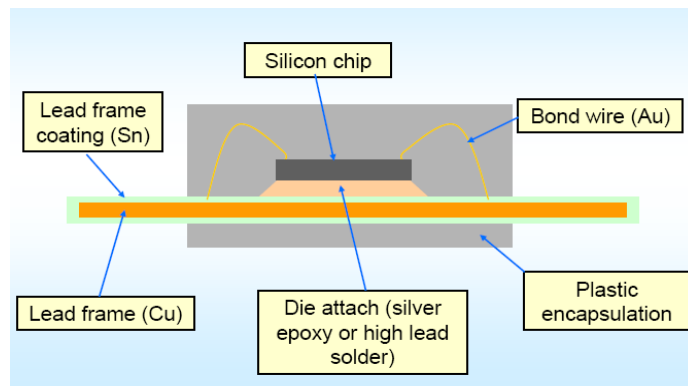
Homogeneous materials

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 eg Resistors, capacitors, semiconductor devices, connectors, plastic housing, wire, fasteners are not considered as homogeneous Materials eg 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/ 96/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.
- 6. Electrical and electronic tools (except large scale stationary industrial tools).
- 7 Toys, leisure and sports equipment
- 10 Automatic dispensers

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

Categories 8 (Medical Equipment) and 9 (Monitoring and Control Equipment) are not currently covered by the RoHS Directive but are under review with a view to inclusion when scientifically and technically feasible . The results of a study by independent consultants ERA Technology were published by the EU Commission in July 2006 with the presentation of proposals for negotiation by Member States expected in late 2008

[ERA study can be viewed via a link on our website](#)

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 Europe has issued a new purchasing control document for all parts.
- A master C of C to be completed by suppliers and reference made to this on delivery or advice notes accompanying the product. (See example on following slide)
- Where available ,only RoHS compliant components will be procured after July 2005
- Regular vendor audits will now include compliance to RoHS
- TDK -Lambda will also conduct in house verification testing using X ray fluorescence (XRF) equipment

TDK -Lambda Europe RoHS Certificate of Conformance Document

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

Verification Testing

- TDK -Lambda Europe has invested in verification test equipment manufactured by Shimadzu comprising an Energy dispersive X-Ray Fluorescence spectrometer, Fourier Transform Infrared Spectrophotometer and UV mini 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



XRF Spectrometer



FTIR Spectrometer



UV MINI Spectrophotometer

RoHS identification

• TDK -Lambda power supplies and dc/dc converters part numbering

- Certain TDK -Lambda power supplies and dc/dc converters will have a " - HFP " (Hazardous Free Product) suffix added to the part number to signify RoHS compliance .This will apply to power supplies and dc/dc converters manufactured in facilities carrying out both RoHS and non RoHS manufacturing processes for a period of time
- Other TDK -Lambda power supplies and dc/dc converters will have unchanged part numbers .This will apply to products where the changeover to RoHS compliant manufacturing takes place facility wide on a given date .
- Refer to TDK -Lambda Product Compliance Roadmap for further details.

• TDK -Lambda EMI Filters part numbering

- TDK -Lambda EMI filters will have a " - HFP " (Hazardous Free Product) suffix added to the part number to signify RoHS compliance .

• Product labeling

RoHS compliant power supplies and dc/dc converters (where practical) and packaging will be labeled by TDK -Lambda to show compliance with the Directive .



Label examples that TDK -Lambda will use to identify RoHS compliant products

RoHS Compliance Roadmap - ACDC Power Supplies



LAMBDA RoHS PRODUCT COMPLIANCE ROADMAP DECEMBER 2007					
ACDC POWER SUPPLIES					
PRODUCT RANGE	RoHS part number suffix	RoHS conformance (1)	PRODUCT RANGE	RoHS part number suffix	RoHS conformance (1)
ALPHA	none	YES	SC120	none	YES
DHP	none	YES [3]	SC150	- G	YES
DLP	- HFP	YES	SIRIUS	none	YES
DPP	none	YES	SR20-660	- HFP	YES
FPS	- HFP	YES	SIRIUS	none	YES
GENESYS 1U / 2U	- HFP	YES	SWS50 - 600	- HFP	YES
H	none	YES	SWT	- HFP	YES
HWS15-1500	- HFP	YES	TH	none	YES
JWS 50-600 , JWS70P -480P	- HFP	YES	TL	none	YES
JWT	- HFP	YES	TX	none	YES
KPS	none	YES	VEGA / VEGA LITE	none	YES
KWD /KWS	- HFP	YES	ZPD / ZPS/ ZPT 20/40/60	none	YES
LWT15H - 50H	- HFP	YES	ZPS100	none	YES
NNS/NND	- HFP	YES	ZUP	- HFP	YES
NV175	none	YES	ZWD - PAF	- HFP	YES
NV 350 / NV350FEP	none	YES	ZWQ	- HFP	YES
PD800	- HFP	YES [3]	ZWS , ZWS -AF , ZWS -PAF	- HFP	YES
SCS / SCT 40/60	- G	YES	ZWS -PF	- HFP	YES [2]

This Roadmap applies to products on the market before July 2006 .
New products introduced from July 2006 will have RoHS Compliance status indicated on website index www.lambda-gb.com/uk/index_models.htm

Notes : (1) The above dates refer to new manufacturing build of the Product Range .Specific models with low demand may not be available RoHS compliant on short leadtime Non RoHS products may be available on customer request until stocks are exhausted . Please contact your local Lambda Sales Office for more detailed information [2] Not all models [3] Can be ordered RoHS compliant - check delivery date - may be subject to component availability for certain models.
NOT PLANNED FOR COMPLIANCE: APS , EMS , ESS , EWS , LWD , LWQ , NES , RWS , ZD/ ZT ,

Please consult Lambda for compliance status of non listed products and nonstandard variants

RoHS Compliance Roadmap - DCDC Converters



LAMBDA RoHS PRODUCT COMPLIANCE ROADMAP DECEMBER 2007					
DCDC CONVERTERS					
PRODUCT RANGE	RoHS part number suffix	RoHS conformance (1)	PRODUCT RANGE	RoHS part number suffix	RoHS conformance (1)
PAE	- HFP	YES	PL	none	YES
PAF	- HFP	YES	PP15	- HFP	YES
PAH	- HFP	YES	PP25	- HFP	YES
PAQ	- HFP	YES	PSS / PSD	- HFP	YES
PC/PCD	- HFP	YES	PV /PVD	- HFP	YES
PF-A	- HFP	YES	PX	none	YES
PH	- HFP	YES			YES

This Roadmap applies to products on the market before July 2006 .
 New products introduced from July 2006 will have RoHS Compliance status indicated on website index www.lambda-gb.com/uk/index_models.htm

Notes : (1) The above dates refer to new manufacturing build of the Product Range .Specific models with low demand may not be available RoHS compliant on short leadtime Non RoHS products may be available on customer request until stocks are exhausted . Please contact your local Lambda Sales Office for more detailed information NOT PLANNED FOR COMPLIANCE: AS , PP/PPD except PP15 PP25 , PR , PT , RM ,
[2] Can be ordered RoHS compliant - check delivery date - may be subject to component availability for certain models.

Please consult Lambda for compliance status of non listed products and nonstandard variants

RoHS Compliance Roadmap - EMI Filters



LAMBDA RoHS PRODUCT COMPLIANCE ROADMAP DECEMBER 2007					
EMI FILTERS					
PRODUCT RANGE	RoHS part number suffix	RoHS conformance (1)	PRODUCT RANGE	RoHS part number suffix	RoHS conformance (1)
MAF - 12xx - 33	- HFP	YES	MX13xxx	- HFP	YES
MAS - 12xx - 33	- HFP	YES	MXB - 12xx - 33	- HFP	YES
MAW - 12xx - 22	- HFP	YES	MYB - 12xx - 22	- HFP	YES
MB12xx	- HFP	YES	MYW - 12xx - 22	- HFP	YES
MB13xx	- HFP	YES	MZ12xx	- HFP	YES
MBS - 12xx - 22	- HFP	YES	MZS - 12xx - 33	- HFP	YES
MBS - 13xx - 33	- HFP	YES	PAN4820	- HFP	YES
MBS48xx	- HFP	YES	PBF - 12xx - 22	- HFP	YES
MBW - 12xx - 22	- HFP	YES	PBP - 32xx - 22	- HFP	YES
MC12xx	- HFP	YES	PBW - 12xx - 33	- HFP	YES
MC13xx	- HFP	YES			

This Roadmap applies to products on the market before July 2006 .
New products introduced from July 2006 will have RoHS Compliance status indicated on website index www.lambda-gb.com/uk/index_models.htm

Notes : (1) The above dates refer to new manufacturing build of the Product Range .Specific models with low demand may not be available RoHS compliant on short leadtime Non RoHS products may be available on customer request until stocks are exhausted . Please contact your local Lambda Sales Office for more detailed information

Please consult Lambda for compliance status of non listed products and nonstandard variants

Exemption 9a - DecaBDE



On 1st July 2008 the RoHS directive Exemption 9a “ DecaBDE in polymeric applications” was deleted (withdrawn)

DecaBDE is a very common flame retardant that has been used in a lot of components and electronic equipment on the market .Its withdrawal follows a ruling by the European Court of Justice relating to procedural errors of granting the original exemption rather than on Health and safety grounds .

All TDK-Lambda power supplies , dcdc converters or filters offered on our website are fully RoHS Compliant ie . Do not exceed the prescribed MCVs (Maximum Concentration Values) of any banned substance including DecaBDE

China RoHS

“China RoHS” is correctly known as “Measures for Administration of the Pollution Control of Electronic Information Products”

**It has several significant differences compared to ‘European RoHS’ and applies to all EIPs (Electronic Information Products) with certain reduced requirements for products sold to OEMs . The scope of equipment falling under the classification of EIP is much wider than EU RoHS and includes components and sub assemblies
Stage 1 in force from 1st March 2007 basically calls for certain labelling requirements and declaration of hazardous content**

Stage 2 will involve the publication of an official Catalogue of EIPs that will be regularly updated and will list specific substance restrictions .Once listed any EIP will need to be tested for compliance by an accredited lab in China before being allowed onto the market. Please refer to our website for useful links to other sites containing more information about China RoHS .TDK-Lambda does not guarantee the accuracy of information contained on external sites .

Note : This information is provided for guidance only . Organisations should ensure that they are aware of and understand the latest official status provided by the Chinese Ministry of Information Industry (MII)