



Explanation of the certifications and standards to which the eco-TL adapter solely complies to.

RoHS

The directive **RoHS** (**R**estriction **o**f **H**azardous **S**ubstances) restricts the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment. Each European Union member state will adopt its own enforcement and implementation policies using the directive as a guide.

RoHS is often referred to as the lead-free directive, but it restricts the use of the following six substances:

- ▶ Lead - Pb
- ▶ Mercury - Hg
- ▶ Cadmium - Cd
- ▶ Hexavalent chromium - Cr⁶⁺
- ▶ Polybrominated biphenyls **PBB**
- ▶ Polybrominated diphenyl ether **PBDE**



PBB and **PBDE** are flame retardants used in several plastics.

RoHS was adopted in February 2003 by the European Union. The **RoHS** directive took effect on 1 July 2006, and is required to be enforced and become law in each member state.

The maximum permitted concentrations are 0.1% or 1000 ppm (except for cadmium, which is limited to 0.01% or 100 ppm) by weight of *homogeneous material*. This means that the limits do not apply to the weight of the finished product, or even to a component, but to any single substance that could (theoretically) be separated mechanically—for example, the sheath on a cable or the tinning on a component lead.

Exemptions are medical devices, and monitoring and control instruments.



The high technology and the extreme smart construction of the eco-tl adapter are the reasons, this is the only adapter presently on the market with the TÜV-certificate.



This certificate confirms the eco-tl adapter complies to the demands of the branch of electrical sciences which studies the unintentional generation, propagation and reception of electromagnetic energy with reference to the unwanted effects (Electromagnetic interference, or EMI) that such energy may induce.

The goal of EMC is the correct operation, in the same electromagnetic environment, of different equipment which use electromagnetic phenomena, and the avoidance of any interference effects. This is relevant for all the other electrical equipment in your local net. Especially in situations where there are critical systems running eg alarmsystems, medical equipment, but also for every living species.



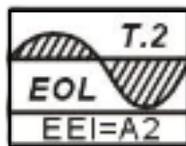
CE marking (originally **EC mark**) is a mandatory conformity mark for products placed on the market in the European Economic Area (EEA). With the CE marking on a product the manufacturer ensures that the product conforms with the essential requirements of the applicable EC directives. The letters "CE" stand for "Conformité Européenne" ("European Conformity"). This certificate is also provided by TÜV.



The **China Compulsory Certificate mark**, commonly known as **CCC Mark**, is a compulsory safety mark for many products sold on the Chinese market. The CCC mark is required for both domestically manufactured products and products imported into China.

The **certification process** usually takes sixty to ninety days and includes the following steps:

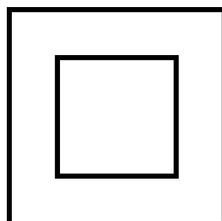
1. Submission of an application and supporting materials
2. Type Testing. A CNCA-designated test laboratory in China will test product samples
3. Factory Inspection. CQC will send representatives to inspect the manufacturing facilities
4. Evaluation of the results
5. Approval of the CCC Certificate (or failure and retesting)
6. Annual Follow-up Factory Inspections by Chinese officials



End-of-life (EOL) certificate confirms the eco-tl adapter complies to the demands the leading institutions on the market requires.

End-of-life (EOL) is a term used with respect to a product supplied to customers, indicating that the product is in the end of its useful and safe lifetime. The eco-tl adapter has the most extreme kind of End Of Life (EOL) control (3 stages)!





This symbol confirms the eco-tl adapter is Class II or **double insulated** this means it has been designed in such a way that it does not require a safety connection to electrical earth (US: ground).

The basic requirement is that no single failure can result in dangerous voltage becoming exposed so that it might cause an electric shock and that this is achieved without relying on an earthed metal casing. This is usually achieved at least in part by having two layers of insulating material surrounding live parts or by using reinforced insulation.

In Europe, a double insulated appliance must be labelled *Class II, double insulated*, or bear the double insulation symbol (a square inside another square).

The eco-tl adapter complies to the following international standards:

EN 60598-1 General requirements and tests for luminaires

For Luminaires, Lighting equipment, Incandescent lamps, Discharge lamps, Electrical safety, Equipment safety, Type testing, Electrical testing, Classification systems, Marking, Safety measures, Mechanical testing, Safety devices, Design, Trading standards, TSS

EN 60598-2-1 Particular requirements for luminaires

For luminaires for use with tungsten filament, tubular fluorescent and other discharge lamps on supply voltages not exceeding 1000 V. To be read in conjunction with BS 4533-101

EN 55015 Radio disturbances

- › Mains Terminal Continuous Disturbance Voltage by 9kHz -30MHz
- › Radiated Electromagnetic Disturbance by 9kHz -30MHz
- › Radiated disturbance by 30 - 300 MHz

EN 61547 EMC immunity requirements

- › Immunity against electrostatic discharge
- › Immunity against Radio Frequency Electromagnetic Fields
- › Immunity against Fast Transients on Input and Output AC Power Lines
- › Immunity against Injected Current into Output AC Power Port
- › Immunity against Surges to AC Power Ports
- › Immunity against Voltage dips and interruptions to AC Power Ports

EN 61000-3-2 Harmonic current emissions

Harmonics on AC Mains in the frequency from 0 to 2 kHz

EN 61000-3-3 Voltage fluctuations and flicker in low-voltage supply systems

Voltage Fluctuations on AC Mains

EN 61347-2-3

Particular requirements for AC supplied electronic ballasts for fluorescent lamps

For the complete test reports visit our website at www.bortly.com.