

INFORMATION BULLETIN

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#0001

SAFETY OF T8 LAMP REPLACEMENT TUBES AND MODIFIED LUMINAIRES

The Electrical Regulatory Authorities Council (ERAC) is aware of T8 fluorescent tube replacements using LED Tubes or T8/T5 fluorescent lamp adaptor technologies being extensively marketed in Australia and New Zealand. These are intended to replace traditional T8 fluorescent tubes either in existing light fittings (luminaires) or in modified luminaires to reduce energy consumption.

ERAC has expressed serious concerns with electrical safety issues of both the LED tubes and T5/T8 fluorescent lamp adaptor assemblies. These concerns are not limited to the lamp products themselves; ERAC is also concerned with the modifications carried out to existing luminaires.

Recent enforcement actions on LED Tubes or T8/T5 fluorescent lamp adaptor replacement tubes by Safety Regulators in Australia, New Zealand, and countries in Europe have shown instances where these products do not comply with essential safety requirements, such as protection against electric shock. In Australia and New Zealand these safety principles are specified in AS/NZS 3820 (*Essential Safety Requirements for Low Voltage Electrical Equipment*).

There have been reports of failures of insulation causing the metal enclosure body of such devices to become live and present an electric shock risk. Another electrical hazard that may be present in some designs is access to live parts. Some designs are such that while being installed, with one end of the tube inserted in the luminaire, the other end may become live and presents a possible accessible electric shock hazard. This is not a best practice for electrical safety design as it would require work practices and procedures to reduce the risk of electric shock. A better design would be to remove the risk by ensuring supply to the product is via one end only.

Currently there is no specific electrical safety standard for these products that could be used to cover all electrical risks. Therefore, designers, manufacturers, importers and suppliers would need to apply requirements from several electrical safety standards and engage in good engineering design principles to ensure the products are made in a manner that is electrically safe. Failure to apply appropriate standards in design, manufacturing and testing of these products may result in an unsafe product.

These issues, and development of standards, are under discussion by ERAC and the Australian and New Zealand electrical safety standards committee for lighting products (EL-041). During these discussions concern has been raised that some manufacturers, importers, distributors, installers and retailers may not be fully aware of the potential safety risks relevant to the replacement tubes they manufacture, import or supply. It was also recognised that guidance, in the form of an Information Bulletin, would be helpful to assist the suppliers in understanding these risks and also the actions required to meet electrical safety requirements.

RECOMENDATIONS

The following is general guidance information only; it may not indicate all that may be required to be done in individual circumstances.

LED T8 tubes and T8/T5 fluorescent lamp adaptor assembly retrofit systems

Suppliers placing LED Tubes or T8/T5 fluorescent lamp adaptor assembly systems on the market intended as either direct replacement in the original luminaire (**retrofit luminaire**) or for use in a **new luminaire** are responsible for ensuring that these products are safe and comply with electrical safety requirements.

Modified luminaires

For a modified luminaire, the manufacturer of the original luminaire will no longer be responsible for compliance of the modified product. Any modifications made to the original luminaire may alter the characteristics of the original product, for example the safety aspects of the original luminaire, hence compliance assessments of the original luminaire may no longer be applicable to the modified luminaire. In this case, the modified luminaire will be considered to be a **new luminaire**.

Persons placing on the market modification kits for incorporation into an existing luminaire must ensure that the modified luminaire is safe when the kit is installed in accordance with their supplied instructions.

When placing a modified luminaire on the market or modifying a luminaire on site, the modified product should comply with the requirements outlined below in this document for **new luminaires**. Those responsible for placing such product on the market have the full responsibility for ensuring its safety and compliance with all applicable electrical product safety standards.

Requirements for new luminaires (including modified luminaires)

1. A new luminaire must be safe and should comply with safety standard AS/NZS 60598.1 and any applicable part 2 of that series of safety standards.
2. A new luminaire should be marked with a warning label that is visible whilst replacing lamps. This warning label should be legible and indelible and show the intent of:
 - *'Warning - not for use with any fluorescent lamps, use only <Brand> <Model Number> <Type> Lamp'*.
3. A new luminaire should have a fuse to protect against short circuits. This fuse should:
 - be of the HRC type and the new luminaire shall have a fuse replacement rating label;
 - be of suitable rating;
 - not be accessible when replacing the lamp; and
 - be accessible only with the use of a tool.
4. Where a luminaire is modified to use a LED Tube or T8/T5 fluorescent lamp adaptor, the luminaire must continue to be safe if a T8 fluorescent lamp is re-installed, although it does not have to function.

Requirements for **retrofit luminaires**

1. No modification of the original luminaire is allowed. It is assumed that the original luminaire will have been fully compliant with safety standard AS/NZS 60598.1 and any applicable part 2 of that series of safety standards.
2. The replacement of a glow starter with other devices does not constitute a modification of the luminaire itself. However the use of such devices should not compromise safety when used in luminaires.

Requirements for **LED Tubes**

1. The LED Tube shall comply with the requirements of safety standards:- AS/NZS 61347.1, IEC 61347.2.13 and relevant requirements of AS/NZS 60598.1.
Note: IEC 62031 may be used in lieu of IEC 61347.2.13
2. Irrespective of the standards mentioned above, where the product has unique characteristics, assessments of safety must have adequately covered all risks of the product. This may involve the use of several other Australia and New Zealand standards and/or international standards and other assessments to ensure the product is electrically safe.
3. The LED tube should be assessed to ensure no access to live parts can be achieved during installation.
4. Full installation instructions and diagrams shall be provided.
5. LED tube shall be capable of being fitted into an un-modified luminaires without causing a safety hazard, although it does not have to function.

Requirements for **T8 to T5 fluorescent lamp adaptor assemblies**

1. The adaptor is a prescribed/declared article and shall have an Australian or New Zealand Certificate of Approval as a 'Fluorescent lamp ballast'.
2. The fluorescent lamp adaptor assembly shall comply with safety standards AS/NZS 61347.1, AS/NZS 61347.2.3 and the relevant requirements of AS/NZS 60598.1.
3. Irrespective of the standards mentioned above, where the product has unique characteristics, assessments of safety must have adequately covered all risks of the product. This may involve the use of several other Australia and New Zealand standards and/or international standards and other assessments to ensure the product is electrically safe.
4. The adaptor should be assessed to ensure no access to live parts can be achieved during installation.
5. Full installation instructions and diagrams shall be provided.
6. T8/T5 fluorescent lamp adaptor assemblies shall be capable of being fitted into an un-modified luminaires without causing a safety hazard, although it does not have to function.

The recommendations of this Information Bulletin are within the framework of current safety legislation, regulations and standards, it does not represent any change in the current safety system. These recommendations are made by ERAC after consultation with industry and other stakeholders and only implications with regard to electrical safety are considered.

It is also noted that for the above products there may be other requirements for manufacturers, importers, distributors, installers or retailers to consider such as legislative requirements relating to EMC, energy efficiency, performance, emergency lighting, fair trading and trade practices.