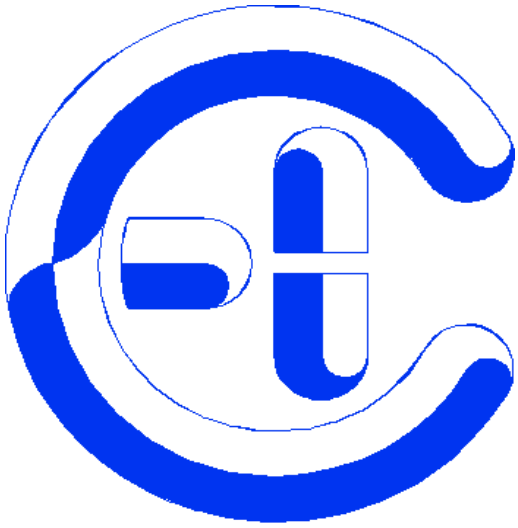
# ELECTRICAL EQUIPMENT SAFETY

# GENERAL GUIDELINES



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# ELECTRICAL EQUIPMENT SUPPLY IN AUSTRALIA

Suppliers of electrical equipment in Australia are regulated under three different compliance regimes.

- Electrical Safety
- Electrical Efficiency
- Electromagnetic Compatibility (EMC)

Australia's State and Territory Governments regulate the safety and efficiency of electrical equipment.

A Federal Government Department, the Australian Communications Authority (ACA), regulates EMC. www.aca.gov.au for EMC information.

The **Office of the Chief Electrical Inspector** (OCEI) is the electrical regulatory authority in Victoria that administers regulations covering electrical **equipment safety** and **efficiency**. http://www.ocei.vic.gov.au/industry/eeoequipment_ind.html for Equipment Efficiency information.

# COORDINATION OF REGULATORY MATTERS

# ERAC

The Electrical Regulatory Authorities Council (ERAC) coordinates the electrical regulatory strategies, policies and ongoing reform activities of the Australian States and Territories as well as New Zealand. These activities include legislation and regulations, general safety promotion and accident prevention, safety of electrical installations and electricity generation and supply, licensing of electrical workers and safety and energy efficiency of electrical equipment.

ERAC's mission, in terms of electrical equipment, is to strive for a uniform regulatory environment and to achieve acceptable levels of electrical safety throughout Australia and New Zealand.

# ELECTRICAL EQUIPMENT SAFETY FRAMEWORK

In the interest of safety, the electrical regulatory authorities of each State and Territory of Australia administer individual, nationally uniform, reciprocal electricity safety legislation aimed primarily at preventing the supply of unsafe electrical equipment and enabling response in the event of non-compliant or hazardous equipment.

In Victoria, refer to Part 4 of the Electricity Safety Act 1998.

The Act and subordinate regulations may be accessed via the publications section of the OCEI's website www.ocei.vic.gov.au

The safety of electrical equipment supplied or offered for supply in Australia is ensured by two complementary regimes.

| **ESSENTIAL SAFETY** | **(PRE-MARKET) APPROVAL** |
|---|---|
| Generally applicable | Specific classes of equipment (Mandatory approval) |

# ESSENTIAL SAFETY REGIME

The foundation of Australian electrical equipment safety legislation is an essential safety regime whereby electrical equipment **suppliers are responsible** to ensure that all electrical equipment supplied or offered for supply in Australia meets minimum safety specifications.

For example;
(Victorian) Electricity Safety Act 1998, Section 54

# (ESSENTIAL SAFETY) STANDARD FOR EQUIPMENT

The Australian/New Zealand Standard "AS/NZS 3820; 1998 Essential safety requirements for low voltage equipment" provides a set of outcome-oriented criteria for the safety of electrical equipment.

These essential safety principles are based on the European Union Low Voltage Equipment Directive.

Briefly, the essential safety requirements specify that

Electrical equipment shall;

- Provide for essential characteristics (ratings, warnings, instructions etc) to be marked in English
- Identify its supplier (trade name, mark etc)
- Be manufactured so it can be safely assembled, installed and connected
- Be manufactured so that in use people and domestic animals are protected against
  - dangers from direct or indirect electrical contact
  - dangerous temperatures arcs or radiation
  - non-electrical danger
  - hazards caused by external influences

AS/NZS 3820 is referenced in Australian Sate and Territory electrical equipment safety legislation / regulations. Therefore, equipment that fulfills the relevant provisions of AS/NZS 3820 satisfies the acceptable minimum safety provisions of legislation.

In general, under the provisions of AS/NZS 3820, equipment that;

- **satisfies the requirements of the applicable published AS/NZS safety standard is accepted as complying**; or
- is (regulatory) approved, (independently) certified, or covered by a recognized safety/test report to an acceptable safety standard is deemed to comply.

# STANDARDS FOR EQUIPMENT

Australian and New Zealand regulatory authorities have adopted Australian (AS) and, increasingly, combined Australian/New Zealand (AS/NZS) standards to specify the safety requirements for electrical equipment.

These standards are developed with industry and public consultation through consensus of expert Australian and New Zealand combined technical committees under the combined coordination of the peak independent standards writing bodies Standards Australia Incorporated (SAI) and Standards New Zealand (SNZ).

In line with Australia's obligations under the World Trade Organisation's Code of Practice, it is policy to align specifications with international standards wherever possible. Accordingly, through evolution and routine maintenance of standards, Australia is progressively adopting international standards, with specific national variations for Australian conditions considered on a case-by-case basis. National variations are published as appendices in AS/NZS standards and in IECEE CB bulletins available from IEC.

To search for or purchase Australian standards, monitor or participate in their development or for other details contact SAI direct at; www.standards.com.au

## MANDATORY INSULATED-PIN PLUGS AND PLUG-IN DEVICES

The latest publication of AS/NZS 3112:2000 *Approval and test specification – Plugs and socket outlets* introduced requirements and tests for the insulation of the live pins (active and neutral pins) of 10 Amp and 15 Amp plugs and equipment with integral pins.

The safety improvement was introduced in response to a number of incidents including fatalities involving plugs or plug-in devices partially removed from a socket and objects such as a metal blind slat, the edge of a sheet of roofing iron or jewellery touching the exposed live plug pin.

In the interests of safety, **no new electrical equipment will be permitted to be supplied or offered for supply in Australia after 3 April 2005 unless it has insulated live pins in accordance with AS/NZS 3112:2000**.

There will be no dispensation given for any product.

# APPROVAL REGIME

The essential safety regime in Victoria is enhanced by a pre-market approval regime applicable to only **fifty two** "prescribed" classes of electrical equipment. Other state regulatory authorities are in the process of reducing their lists from fifty eight to fifty two classes of equipment.

The list of prescribed electrical equipment has evolved through public and industry consultation over decades to include equipment that exhibits the greatest potential or actual safety risk through the following;

- inherent nature or critical function
  (For example SELV power supplies, circuit breakers, plugs and sockets)

- significant incidence of unsafe failure in use
  (Most recently TV receivers and Fluorescent lamp starters)

Note- by intention, the definitions for these 52 classes of equipment differ from the definitions (scopes) of the particular applicable safety standards.

It is an offence under legislation in all States and Territories of Australia to **supply or offer to supply** "prescribed" classes of electrical equipment unless the equipment is approved by a (regulatory) approval authority or certified under a recognised certification scheme.

Approval/certification is product specific and generally not vested with any particular supplier or approval/certification holder. Once approved, equipment of the class or type may be supplied or on-supplied by any number of parties for the duration of the approval provided it is identical to that originally approved/certified and that it carries its allocated approval/certification mark.

For Example;
(Victorian) Electricity Safety Act 1998, Section 57(2)

**It is not an offence under equipment safety legislation to manufacture, import, use, install or repair non-approved prescribed electrical equipment, however its approval and the presence of an approval or certification mark is prima facie evidence of the safety of the equipment type.**

Although approval (regulatory) authorities possess discretionary provisions, the agreed basis of the approval regime is independent type testing of equipment by a recognised testing authority for compliance with applicable Australian safety standards.

# PRESCRIBED CLASSES OF ELECTRICAL EQUIPMENT

| | |
|---|---|
| Appliance connector | Kitchen machine |
| Arc welding machine | Lawn care appliance |
| Battery charger-automotive type | Liquid heating appliance |
| Battery charger-general type | Luminaire-portable type |
| Bayonet lampholder | Massage appliance |
| Bayonet lampholder adaptor | Microwave oven |
| Blanket | Miniature over-current circuit breaker |
| Bread toaster | Outlet device |
| Clothes dryer | Plug |
| Control or conditioning device | ~~Projector~~ |
| Cooking appliance-portable type | Range |
| Cord extension socket | Range hood |
| Cord-line switch | Razor/hair clipper |
| Decorative lighting outfit | Refrigerating appliance |
| Dishwasher | Residual current device |
| Edison screw lampholder | Room heater |
| Extra-low voltage power supply unit | ~~Sewing machine~~ |
| Fan | Socket-outlet |
| ~~Fence energizer~~ | Soldering iron |
| Flexible heating pad | Supply flexible cord |
| ~~Floor polisher/scrubber~~ | Swimming pool/spa equipment |
| Fluorescent lamp ballast | Television receiver |
| Fluorescent lamp starter | ~~Therapeutic lamp~~ |
| Hair care appliance | Tool-portable type |
| ~~Hedge clipper~~ | Vacuum cleaner |
| Immersion Heater | Wall switch |
| Insect electrocute | Washing machine |
| Inspection handlamp | Water bed heater |
| Iron | Water heater-pressure storage type |

Strikethrough identifies classes that have been de-prescribed in Victoria.

# APPROVAL MARKING

Approved electrical equipment must display the approval marking assigned by the issuing approval authority.

The means of marking is not specifically defined, except that it must be legible, indelible and on a normally visible part of the equipment.

**APPROVAL MARKING OPTIONS**

- Unique approval marking
- Regulatory compliance mark (RCM)

**UNIQUE APPROVAL MARK**

The details of the marking may vary between authorities.

The approval marking allocated by the (regulatory) approval authorities is typically an alphanumeric code comprising the first letter of the State of the issuing approval authority followed by between one and six digits.

For example, the approval marking issued by (the OCEI in) **V**ictoria could be

**V3**
**V98887** (in this example the first two numerals indicate the year of issue of the approval)

And;

- Queensland issued approval marking **Q98887**
- New South Wales issued approval marking **N18887**
- South Australian issued approval marking **S263**
- Tasmanian issued approval marking **T98887**

**REGULATORY COMPLIANCE MARK**

The regulatory compliance mark (RCM) is a graphic symbol that may optionally be used, subject to specific conditions, to indicate a supplier's claim that a product meets applicable regulatory requirements.

The RCM is a multi-jurisdictional symbol covering the regulatory regimes of electrical safety, electromagnetic compatibility (EMC) and radio communications.

The conditions for use of the RCM are described in detail in joint Australian/New Zealand Standard AS/NZS4417.1 “Marking of electrical products to indicate compliance with regulations Part 1: General rules for use of the mark”.

In brief, registered suppliers may apply the RCM to equipment that satisfies the relevant regulatory requirements of **all** (three) applicable jurisdictions.

Although no specific (safety regulatory) permission is needed to use the RCM, suppliers are required to be registered with the Australian Communications Authority (ACA), the EMC regulator.

Further information about the RCM can be obtained from Standards Australia

www.standards.com/rcm

# SECOND-HAND EQUIPMENT

Second hand prescribed classes of equipment need not be (or have been) approved nor exhibit an approval number provided that;

- the equipment is labelled second-hand;
- the equipment is not subject to withdrawal of approval, recall or prohibition of supply; and
- if supplied in the course of business; either
  - the equipment be inspected and tested to ensure compliance with AS/NZS 3760 and labelled to show compliance; or
  - the equipment be clearly marked “DANGER DO NOT USE OR CONNECT TO SUPPLY – THIS ELECTRICAL EQUIPMENT MAY BE FAULTY AND SHOULD BE INSPECTED AND TESTED BY A COMPETENT PERSON IN ACCORDANCE WITH AS/NZS 3760

Whether new or second-hand, electrical equipment not included in the list of 52 prescribed classes may be supplied or offered for supply without having been approved, however it is the responsibility of the supplier to ensure that such equipment is safe. In this respect it is recommended that all second hand electrical equipment be subjected to the provisions listed above.

# INTER-AUTHORITY CONSULTATION

Australian electrical regulatory authorities have well-established communication and consultation channels through ERAC and the ERAC Equipment Safety Working Group and by direct consultation between Officers of the various authorities.

Authorities assist each other whenever possible to investigate electrical incidents, accidents, hazards and compliance.

# COMPLIANCE

## APPROVAL COMPLIANCE

Regulatory authorities conduct routine, regular marketplace surveillance to ensure suppliers compliance with (approval regulation) registration requirements.

In Victoria alone, the OCEI audits approximately 1,000 prescribed products per annum; nationally approximately 11,700.

## SAFETY COMPLIANCE

Additionally, regulatory authorities conduct a coordinated national equipment check-testing program.

This initiative targets particular characteristics of specific equipment types that, at the particular given time, exhibit in-service failure trends or otherwise demand particular scrutiny; for example to ensure compliance with particular critical requirements.

Recent targeted classes of equipment include

- Breadmakers (fire hazard)
- Fans (fire hazard)
- Room heaters (fire hazard)
- Televisions (fire hazard)
- Hair dryers (electric shock hazard)
- Portable power tools (electric shock hazard)
- ELV Power supply units (electric shock hazard)
- Outlet devices (multi-outlet power-boards) (fire and electric shock hazard due to suspected non-resilient socket contacts)
- Socket outlets (GPOs) (dimensional compliance)
- Supply flexible cords (size)

# ENFORCEMENT

Because separate legislation is applicable in each State and Territory, Australian electrical regulatory authorities posses varying enforcement provisions that may include the following-

Agreements to cooperate with or authority to enlist cooperation of other authorities (e.g. Police, fire services, OH&S and consumer affairs regulators)

Issue directives to

- Cease to supply (or offer to supply) equipment
- Cease to use equipment
- Cease a particular practice
- Recall supplied equipment
- Publish safety warnings
- Provide information
- Modify equipment

Powers to

- Enter premises
- Seize evidence
- Seize equipment

Issue infringement notices (on-the-spot fines)

Prosecute

Publish notices, warnings or alerts

Withdraw approval