



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.acma.gov.au for EMC information.

Energy Safe Victoria (ESV) is the electrical regulatory authority in Victoria that administers regulations covering electrical **equipment safety** and **efficiency**.

http://www.esv.vic.gov.au/industry/soeequipment_ind.html for Equipment Safety information.

http://www.esv.vic.gov.au/industry/eoequipment_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.

<http://www.erac.gov.au/> for ERAC information.

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 ESV's website [Industry - Acts, Regulations, Codes of Practice and Guidelines](#)

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

ESSENTIAL SAFETY

Generally applicable

(PRE-MARKET) APPROVAL

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 State 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 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 3112:2004 *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 2006 unless it has insulated live pins in accordance with AS/NZS 3112:2004.

No electrical product will be granted electrical safety approval unless it is fitted with insulated live pins after 3 April 2005.

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 currently have fifty eight 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	Liquid Heating Appliance
Arc welding machine	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	Power supply or charger
Cooking appliance-portable type	Projector
Cord extension socket	Range
Cord-line switch	Range hood
Decorative lighting outfit	Razor/hair clipper
Dishwasher machine	Refrigerating appliance
Edison screw lampholder	Residual current device
Fan	Room heater
Fence energizer	Sewing machine
Flexible heating pad	Socket-outlet
Floor polisher/scrubber	Soldering iron
Fluorescent lamp ballast	Supply flexible cord
Fluorescent lamp starter	Swimming pool/spa equipment
Hair care appliance	Television receiver
Hedge clipper	Therapeutic lamp
Immersion Heater	Tool-portable type
Insect electrocutor	Vacuum cleaner
Inspection handlamp	Wall switch
Iron	Washing machine
Kitchen machine	Water bed heater
Lawn care appliance	Water heater

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 (ESV in) Victoria could be

V3

V05887 (in this example the first two numerals indicate the year of issue of the approval)

Or for products approved in other states:

- Queensland issued approval marking **Q05887**
- New South Wales issued approval marking **N18887**
- South Australian issued approval marking **S263**
- Tasmanian issued approval marking **T05887**

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 RCM registrar at Standards Australia.

Further information about the RCM can be obtained from Standards Australia www.standards.com.au/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, ESV 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 possess 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.