

Chemical batteries were in use before electricity was generated and battery development continued after electricity generation was introduced.

Batteries were a reliable local source of power used for lighting when generators were shut down outside the working hours of industry. Lead acid batteries were the first type to be rechargeable. They are still commonly used for starting motor vehicle engines and for powering electric forklifts.

The use of batteries continues to grow with technology improvements. We are now using batteries in multiple devices daily for routine activities. Batteries and charging units sold in Australia are manufactured and tested to a suitable safety standard. The severity of operating conditions will determine appliance or battery installation service life and safety. An accident or a loss is a reminder to observe some safety precautions that protect us from the hidden potential of batteries to do harm.



A minimal amount of attention is paid to batteries while recharging or while in operation. This means developing faults can remain unidentified until the point of failure. Intervention is unlikely and the damage or loss may be limited only by the combustibility of surrounding materials. For this reason, it is best practice to provide a charging space free of conditions that would allow the development of an explosive atmosphere or development and escape of fire beyond the appliance.

Earth leakage safety switch protection or electrical test and tag inspection is usually part of a safety maintenance inspection for plug in battery charging units. It is also important to check the condition of battery charging leads. These leads and connectors have significant potential to cause ignition and fire. The batteries will contain a residual charge at the time of connection for

recharging, and when in the process of recharge will carry the batteries growing level of stored potential.

If there is a breakdown of insulation on the conductor leads, batteries have a power output that will generate heat under short circuit or fault conditions. Heating to the point of ignition is likely and in the absence of any fault current isolation (fuse protection) the uncontrolled discharge is likely to continue unchecked. For this reason, the charger output wires and connectors should have insulation in good condition, free of cracks or damage. Charging leads should be disconnected from the battery when not in use or the battery is fully charged.

The charging of a wet cell lead acid battery produces a small volume of hydrogen. Provide adequate ventilation to ensure hydrogen gas remains below an explosive level.

Lithium type batteries have a high discharge potential. This makes them useful for solar power storage and in portable equipment, forklifts and electric vehicles. Many domestic appliances such as portable electric tools, bicycles, scooters and phones also use them. Inspect plug in chargers, battery leads and removable batteries for damage. Store loose lithium batteries to prevent damage, accidental discharge or short circuit. A heavy impact may cause internal damage resulting in chemical or mechanical induced discharge and heating to the point of ignition or explosion.

Precautions to observe:

- Always use the correct battery charger type which may include thermal protection.
- Inspect charging units for deterioration of leads, insulation, connecting clamps and plugs.
- Charge batteries away from combustibles.
- Avoid storage of metal or conducting material that could fall onto terminals, cables or leads.
- Provide adequate ventilation.
- Protect or avoid the risk of mechanical impact damage to batteries, leads or plugs.
- A suitably qualified person should inspect damaged batteries.
- Disconnect the battery from charging leads when the charger is not in use.
- Turn off the power to charging units when not in use.