

health & safety

The handling and the proper use of lead-acid batteries is not hazardous provided appropriate facilities are available and operatives, having been instructed, are adequately supervised and take reasonable care.

The purpose of this guide is:

- A.** To indicate the potential hazards that may arise.
- B.** To outline the precautions to be taken to minimise such hazards.
- C.** To indicate the action to be taken in the event of an emergency situation.

1. Sulphuric Acid

Sulphuric acid is contained in batteries (drycharge batteries prior to filling with acid excluded) and may be given off as droplets and/or a fine mist during charging.

Nature of the hazard

Battery acid is a poisonous, and corrosive liquid, which will cause burns and irritation to the skin and eyes.

Precautions

Always handle batteries with care and keep upright. Do not overfill batteries and always charge in a well ventilated area. Use eye protection and protective clothing where there is any risk from splashes.

Accident or emergency action/treatment

Skin contact: Immediately drench the affected area with clean water and remove any contaminated clothing. If any soreness or irritation persists seek medical advice.

Eye contact: Immediately wash out the eyes with clean water for at least 10 minutes and seek prompt medical attention.

Ingestion: Do NOT induce vomiting but make patient drink as much water or milk as possible, followed by milk of magnesia, beaten eggs or vegetable oil and seek immediate medical attention.

Spillage: Small spillages can be quite simply dealt with by swilling away with plenty of water.

Disposal: Suitable acid resistant labelled containers should be used. See Section 6.

2. Electrical Energy

Electrical energy can be supplied from batteries and charging equipment.

Nature of hazard

Burns may occur from the heating effect of tools and conductive objects in contact with live battery terminals or conductors.

In addition sparks and molten metal may be ejected and combustible materials, notably the gaseous fumes, ignited to cause potentially lethal explosions.

It is possible to receive a severe electric shock from charging equipment and from a number of batteries connected in series: i.e. five or more 12 volt batteries - 60 volt nominal.

A. Make sure it is safe to approach. If the casualty is not clear of a live conductor break the contact. Switch off the current, remove the plug, or wrench the cable free. If this is not possible, stand on dry insulating material (wood, rubber, brick, thickly folded newspaper, book) and try to push or pull the casualty clear of contact using similar insulating material as a lever. Do not touch him with bare hands.

B. If necessary give artificial respiration.

3. Emission of Gases

Hydrogen and oxygen are emitted during charging and can be emitted at other times, particularly if a battery is moved or shaken.

Nature of hazard

An explosive atmosphere is created if the concentration of hydrogen in air exceeds 4%.

Precautions

Keep, fill, charge, check and test in a well ventilated area.

As an added precaution, blow across the terminals and the vent holes to disperse any ignitable fumes.

Avoid sources of ignition close to batteries. In particular:

- No smoking.
- No naked flames.
- Switch off current before breaking electrical connection.
- Avoid sparks caused by accidental short circuits.

See also Section 2.

Accident or emergency treatment/action

Explosion: Seek any necessary medical attention and remember that sulphuric acid may have been ejected (see Section 1).

4. Weight

Batteries are generally heavy, awkward units to handle and correct lifting techniques must therefore be used.

5. Damaged Batteries

Battery plates consist of lead and its compounds but can only be exposed if a battery is broken open.

In the unlikely event of this happening any spillage should be well dampened, swept up and placed in a suitable acid resistant labelled container prior to disposal. Normal personal hygiene precautions should be observed. See also Section 1 and 6.

6. Disposal

Batteries, battery cases, battery acid, and lead and lead compounds, must not be burned but must be disposed of in accordance with the appropriate legislation and local authority rules and regulations, i.e. the 1996 Special Waste Regulation.

Precautions

Before using conductive tools on a battery remove metallic personal adornments from the hands and wrists.

Before working on a vehicle electrical system blow across the terminals and the vent holes to disperse any fumes and disconnect the battery where there is any risk of accidental short circuits.

Always disconnect the earth terminal from a battery first and connect last.

Keep, charge, check and test batteries in a well ventilated area.

Do not place tools or conductive objects on top of batteries. Before using a battery charger consult manufacturer's literature.

Remember to switch the charger off before connecting or disconnecting a battery.

Note: Before disconnecting the battery, record radio settings, etc., if applicable, and refer to vehicle manufacturer's handbook for any other necessary precautions. Do not place tools on top of batteries.

Accident or emergency action/treatment

Burns: Apply a dry sterile dressing and seek medical attention.

Electric Shock: Immediate action is essential in cases of severe electrical shock as the nerves controlling breathing and heart action may be affected.

Do not delay treatment by calling for a doctor; this should be done quickly if help is available or when the casualty recovers.

7. Warning

Battery acid is highly corrosive. Avoid contact with skin, eyes and clothing. In the event of spillage, immediately drench the affected parts with clean water. The gases which collect above the electrolyte during charging are highly flammable. Never allow a naked flame near the battery and avoid any possibility of a spark igniting these gases.

