

VALVE-REGULATED LEAD-ACID BATTERIES

1. PRODUCT AND COMPANY IDENTIFICATION

IDENTIFICATION OF PRODUCTS

862120 Valve-regulated lead-acid battery

5799000042Z

COMPANY IDENTIFICATION

SCHUMACHER EUROPE SPRL

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2. HAZARDS IDENTIFICATION

No hazards occur during the normal operation of a lead acid battery as it is described in the instructions for use that are provided with the battery. Lead-acid batteries have three significant characteristics:

- They contain an electrolyte which contains diluted sulphuric acid. Sulphuric acid may cause severe chemical burns.
- During the charging process or during operation they might develop hydrogen gas and oxygen, which under certain circumstances may result in an explosive mixture.
- They can contain a considerable amount of energy, which may be a source of high electrical current and a severe electrical shock in the event of a short circuit.

The batteries have to be marked with the symbols listed under item 15.

3. COMPOSITION/INFORMATION ON MAIN INGREDIENTS

Chemical Name	CAS-No	Weight %
Lead Grid (metallic lead, lead alloys with possible traces of additives)	7439-92-1	~32
Electrolyte (diluted sulphuric acid with additives)	7664-93-9	~29
Active Mass (Battery oxide, inorganic lead compounds)	7439-92-1	~32
Plastic container / Plastic parts	N/A	~7

4. FIRST AID MEASURES

- First aid measures to be taken and actions to be avoided

Do not allow flames or sparks in the vicinity of batteries;

In case of explosion with discharge of electrolyte, rinse the person copiously with water and call a doctor.

In case of discharge of electrolyte, rinse the person copiously with water.

- Most common symptoms

- deafening due to explosion of an accumulator cell
- ejection of plastic parts and/or electrolyte
- burns due to discharge of electrolyte.

- Advice for protection of emergency services

To avoid static electricity, which can cause accumulator cells to explode, do not wear synthetic clothes. If electrolyte is present, wear an apron, acid-proof gloves, safety glasses, rubber boots.

- Instructions for the doctor

Auscultate the victim checking for any burns, impact of plastic parts, to detect any trauma and auditory consequences of explosive blast.

5. FIRE-FIGHTING MEASURES

- Fire extinction – advisable and inadvisable measures

Use an all-purpose powder extinguisher. Do not use a water extinguisher/fire hose.

- Dangers associated with combustion products

The following can be given off in a fire: carbon dioxide (CO₂) and steam. In addition small quantities of the following substances can be formed: carbon monoxide, monomers, other degradation products, hydrogen cyanide (traces), compounds of: antimony bromine (for the HI products only). These releases are irritating to the throat, nose and eyes.

- Specific dangers associated with fire-fighting

To avoid any risk of burns or noxious inhalation, use fire-proof clothing and equipment and autonomous breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions

If electrolyte is present, wear an apron, acid-proof gloves, safety glasses, rubber boots.

- Environmental protection precautions

Wearing the personal equipment specified above, collect up the products into leakproof containers and contact an approved collector of this type of industrial waste.

- Cleaning procedures

In case of spillage of electrolyte, rinse copiously with water.

7. HANDLING AND STORAGE

- Storage

Store the battery in a cool, clean, dry, well-ventilated area for such period as is defined in the technical manuals of the product concerned.

- Handling

Wear an apron, acid-proof gloves, safety glasses, rubber boots. Handle with care: accumulator cells break easily on impact.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Each person present should be equipped with an apron, acid-proof gloves, safety glasses, rubber boots.

To avoid static electricity, which can cause accumulator cells to explode, do not wear synthetic clothes. If electrolyte is present, wear an apron, acid-proof gloves, safety glasses, rubber boots.

Do not smoke or bring any flame or cause electrical sparks near the cells.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical aspects : parallelepiped made of plastic containing an acid electrolyte absorbed in a glass mat separator.
- Electrolyte : sulphuric acid (H₂SO₄), 32% to 40% concentration by mass.
- Density : 1.240 to 1.300.

- Odour : odourless.
- pH : acid : smaller than 1 .
- Boiling point : approximately equal to 110°C .
- Freezing point : - 50°C to - 65°C.
- Vapour pressure at 20°C: 13.8 to 16.3 mm Hg .
- Solubility : 100% in water.
- Inflammability and explosiveness : A mixture of hydrogen and oxygen being released from the accumulators can, in the presence of a flame or spark, lead to explosion of the cells.

10. STABILITY AND REACTIVITY

A stable product, but reacts strongly with bases, combustible substances, oxidants...

Dangerous decomposition products:

- inflammable hydrogen
- SO₃.

11. TOXOLOGICAL INFORMATION

This information does not apply to the finished product "lead-acid battery". This information only applies to its compounds in case of a broken product. Different exposure limits exist on a national level.

11.1 Electrolyte (diluted sulphuric acid):

Sulphuric acid is intensely corrosive to skin and mucous membranes; the inhalation of mists may cause damage to the respiratory tract.

Acute toxicity data:

LD₅₀ (oral, rat) = 2140 mg/kg

LC₅₀ (inhalation, rat) = 510 mg/m³/2h

11.2 Lead and lead compounds

Lead and its compounds used in a lead acid battery may cause damage to the blood, nerves and kidneys when ingested. The lead contained in the active material is classified as toxic for reproduction.

12. ECOLOGICAL INFORMATION

This information is of relevance if the battery is broken and the ingredients are released to the environment.

12.1 Electrolyte (diluted sulphuric acid)

In order to avoid damage to the sewage system, the acid has to be neutralised by means of lime or sodium carbonate before disposal. Ecological damage is possible by change of pH. The electrolyte solution reacts with water and organic substances, causing damage to flora and fauna. The electrolyte may also contain soluble components of lead that can be toxic to aquatic environments.

12.2 Lead and lead compounds

Chemical and physical treatment is required for the elimination from water. Waste water containing lead must not be disposed of in an untreated condition.

The former classification of lead compounds as toxic for the aquatic environment R50/53 had been triggered from test results generated in the 80's for soluble lead compounds (lead acetate). The hardly soluble lead compounds such as battery lead oxide were not tested at this time. Tests on battery lead oxide were carried out in 2001 and 2005. The respective test results concluded that battery lead oxide is not toxic for the environment, neither R50 nor R50/53 nor R51/53. From this it follows that the general classification for lead compounds (R50/53) does not apply to battery lead oxide. As a result of this, the risk phrase R52/53 (harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment) applies to battery lead oxide (see chapter 12 – Ecological Information)

Effects of battery lead oxide in the aquatic environment:

- Toxicity for fish: 96 h LC 50 > 100 mg/l - Toxicity for daphnia: 48 h EC 50 > 100 mg/l - Toxicity for alga: 72 h IC 50 > 10 mg/l

The results demonstrate that the battery lead oxide compounds in a concentration of 100 mg/l have no adverse effect on fish and daphnia. A concentration of the battery lead oxide of 10 mg/l has no adverse effect on the rate of growth and the biomass.

For the classification according to Directive 67/548/EEC the most sensitive adverse effect has to be considered. As a result of the toxicity for alga at > 10 mg/l battery lead oxide has to be classified according to the R-Phrases 52/53 (Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment).

13. RECYCLING INFORMATION

Spent lead-acid batteries (EWC 160601) are subject to regulation of the EU Battery Directive (2006/66/EC) and its adoptions into national legislation on the composition and end-of-life management of batteries.

Spent lead-acid batteries are recycled in lead refineries (secondary lead smelters). The components of a spent lead-acid battery are recycled or re-processed.

At the points of sale, the manufacturers and importers of batteries, respectively the metal dealers take back spent batteries, and render them to the secondary lead smelters for processing.

To simplify the collection and recycling or re-processing process, spent lead-acid batteries must not be mixed with other batteries.

By no means may the electrolyte (diluted sulphuric acid) be emptied in an inexpert manner. This process is to be carried out by the processing companies only.

14. TRANSPORT INFORMATION

VRLA batteries only:

Land Transport	Land Transport (ADR/RID, U.S. DOT) - UN N°: UN2800 - Classification ADR/RID: Class 8 - Proper Shipping Name: BATTERIES, WET, NON SPILLABLE electric storage - Packing Group ADR: not assigned - Label required: Corrosive - ADR/RID: New and spent batteries are exempt from all ADR/RID (special provision 598).
Sea Transport	Sea Transport (IMDG Code) - UN N°: UN2800 - Classification: Class 8 - Proper Shipping Name: BATTERIES, WET, NON SPILLABLE electric storage - Packing Group: III - EmS: F-A, S-B - Label required: Corrosive - If non-spillable batteries meet the Special Provision 238, they are exempted from all IMDG codes provided that the batteries' terminals are protected against short circuits.
Air Transport	Air Transport (IATA-DGR) - UN N°: UN2800 - Classification: Class 8 - Proper Shipping Name: BATTERIES, WET, NON SPILLABLE electric storage - Packing Group: III - Label required: Corrosive - If non-spillable batteries meet the Special Provision A67, they are exempted from all IATA DGR codes provided that the batteries' terminals are protected against short circuits.

15. REGULATORY INFORMATION

In accordance with EU Battery Directive and the respective national legislation, Lead-Acid batteries have to be marked by a crossed out dust bin with the chemical symbol for lead shown below, together with the ISO return/recycling symbol.



In addition Lead-Acid batteries have to be labelled with the hazard symbols described below:



No smoking, no open flames, no sparks



Wear Safety goggles



Keep away from children



Corrosive



Observe operating instructions



Explosive gas mixture

Labelling might vary due to application and dimension of the Battery. The manufacturer, respectively the importer of the batteries shall be responsible for placing the symbols (a minimum size is specified). In addition, consumer/user information on the significance of the symbols may be attached.

16. OTHER INFORMATION

Products such as batteries are not in the scope of the regulation which requires the publication of an EU Safety Data Sheet (91/155/EEC).

The information given above is provided in good faith based on existing knowledge and does not constitute an assurance of safety under all conditions. It is the user's responsibility to observe all laws and regulations applicable for storage, use, maintenance or disposal of the product. If there are any queries, the supplier should be consulted.

However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

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