

SAFETY DATA SHEET - SLA BATTERIES

1. Identification of Product and Company

Company: Power-Sonic Europe Ltd

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2. Compositions and Information on the main ingredients ³⁾

CAS no.	Description	Content ¹⁾ [% of weight]	Hazard symbol
7439-92-1	Lead Grid (metallic lead, lead alloys with possible traces of additives)	~ 32	T ²⁾
7439-92-1	Active Mass (Battery Oxide, inorganic lead compounds)	~ 32	T ²⁾
7664-93-9	Electrolyte ⁴⁾ (Diluted sulphuric acid with additives)	~ 29	C
	Plastic Container / Plastic Parts ⁵⁾	~7	

1) contents may vary due to performance data of the Battery

2) As results of the harm to the unborn children Lead compounds are classified as toxic for reproduction, category 1. As this is not described with a specific hazard symbol, Lead compounds have to be labelled with the -skull * symbol. Lead compounds are not classified -toxic*

3) see chapter 12 - Ecological information

4) Density of the electrolyte varies in accordance to the state of charge

5) Composition of the plastic may vary due to different customer requirements

3. Hazards Identification

No hazards occur during the normal operation of the 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 items 15.

4. First Aid measures

The information is of relevance only if the battery is broken and this results in a direct contact with the ingredients

4.1 General

Electrolyte (diluted sulphuric acid):	sulphuric acid acts corrosively and damages skin.
Lead compounds:	lead compounds are classified as toxic for reproduction (if swallowed)

4.2 Electrolyte (Sulphuric acid)

after skin contact:	rinse with water, remove and wash wetted clothing
after inhalation of acid mist:	inhale fresh air, seek advice of a medical doctor
after contact with the eyes:	rinse under running water for several minutes, seek advice from a medical doctor
after swallowing:	drink lots of water immediately, swallow activated carbon, do not induce vomiting, seek advice from a medical doctor

4.3 Lead compounds

after skin contact:	clean with water and soap
after inhalation:	inhale fresh air, seek advice of a medical doctor
after contact with the eyes:	rinse under running water for several minutes, seek advice of a medical doctor
after swallowing:	wash mouth with water, see advice of a medical doctor

5. Fire fighting measures

Suitable fire extinguishing agents:

CO₂ of dry powder extinguishing agents

Unsuitable fire extinguishing agents:

Water, if the battery voltage is above 120V

Special protective equipment:

Protective goggles, respiratory protective equipment, acid protective equipment, acid-proof clothing in case of larger stationary battery plants or where larger quantities are stored.

6. Measures to be taken in case of accidental release

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

In the case of spillage, use a bonding agents agent, such as sand, to absorb spilt acid; use lime/ sodium carbonate for neutralisation; dispose of with due regard to the official local regulations; do not allow penetration into the sewer system, into earth or water bodies

7. Handling and storage

Store under roof in cool ambience - charged lead-acid batteries do not freeze up to -50°C; prevent short circuits. Seek agreement with local water authorities in case of larger quantities of batteries to be stored. If batteries have to be stored, it is imperative that the instructions for use are observed.

8. Exposure limits and personal protective equipment

8.1 Lead and Lead compounds

No exposure to lead and lead-containing battery paste during normal conditions of use.

8.2 Electrolyte (sulphuric Acid)

Exposure to sulphuric acid and acid mist might occur during filling and charging.

Threshold value in workplace:	occupational exposure limits for sulphuric acid mist are regulated on a national basis.
Hazard symbol:	C, corrosive
Personal protective equipment:	Protective goggles, rubber or PVC gloves, acid-resisting clothing, safety boots
CAS-No:	7664-39-9
R-phrases:	R-35 Causes severe chemical burns
S-phrases:	S-2 Keep out of reach of children S-16 Keep away from sparks or naked flame, No smoking S-26 In case of contact with eyes rinse immediately with plenty of water and seek medical advice S-45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

9. Physical and Chemical properties

	Lead and Lead compounds	Electrolyte (diluted sulphuric acid, 30 to 38.5%)
Appearance		
form:	solid	liquid
colour:	grey	colourless
odour:	odourless	odourless
Safety-related data		
solidification point:	327 °C	-35 to -60 °C
boiling point:	1740 °C	approx. 108 to 114 °C
solubility in water:	very low (0.15 mg/l)	complete
density (20°C):	11.35 g/cm ³	1.2 to 1.3 g/cm ³
vapour pressure (20°C):	N.A.	N.A.

Lead and Lead compounds use in Lead-Acid batteries are poorly soluble in water, lead can be dissolved in an acidic or alkaline environment only.

10. Stability and Reactivity (sulphuric acid, 30 - 35,5 %)

- Corrosive, non flammable liquid
- Thermal decomposition at 338° C
- Destroys organic materials such as cardboard, wood, textiles
- Reacts with metals, producing hydrogen
- Vigorous reactions on contact with sodium hydroxide and alkalis

11. Toxicological 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 intensely corrosive to skin and mucous membranes; the inhalation of mists may cause damage to the respiratory tract

acute toxicity data:

$$LD_{50} \text{ (oral, rat)} = 2.140 \text{ mg/kg}$$

$$LC_{50} \text{ (inhalation, rat)} = 510 \text{ mg/m}^3 \text{ /2h}$$

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 sewer 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 conclude that Battery Lead Oxide is not toxic for the environment, neither R50 nor R50/53. From this it follows that the general classification for Lead compounds (R50/53) does not apply to Battery Lead Oxide. As the result of this the Risk Phrase R52/R53 (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 > 100mg/l
- Toxicity for daphnia: 48 h EC 50 > 100mg/l
- Toxicity for alga: 72 h IC 50 > 10 mg/l

The results demonstrate these Battery Lead Oxide compounds in a concentration of 10 mg/l have no adverse effect on fish and daphnia. A concentration of these Battery Lead Oxide of 10mg/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. Disposal Considerations

Spent lead-acid batteries (EWC 1606/1) are subject to regulation of the EU Battery Directive 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 are recycled or re-processed.

At the point 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 Regulation

	Components		
14.1	VRLA Battery	Land Transport	Land Transport (ADR / RID) UN N°: UN2800 Classification ADR / RID: Class 8 Proper Shipping Name: BATTERIES, WET, NON-SPILLABLE electric storage Packing Group ADR: not assigned Tunnel code: E ADR / RID: New and spent (used) 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 Non-spillable batteries meet the requirements of Special Provision 238; they are therefore exempt from all IMDG codes and are not regulated for sea transport.
		Air Transport	Air Transport (IATA-DGR) UN N°: 2800 Classification: Class 8 Proper Shipping Name: BATTERIES, WET, NON-SPILLABLE electric storage Packing Group: III <u>Special Provision A48</u> : Packaging test are not considered necessary <u>Special Provision A67</u> : Power-Sonic's VRLA batteries meet the requirements of Packing Instruction 872. The battery has been prepared for transport so as to prevent: a) A short-circuit of the battery's terminals by packaging in a strong and sturdy carton box; AND/OR b) The battery has been fitted with an insulating cover (made from ABS) which prevents contact with the terminals. c) Unintentional activation is thus prevented The words "NOT RESTRICTED" and the Special Provision (SP)

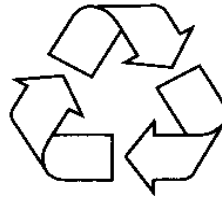
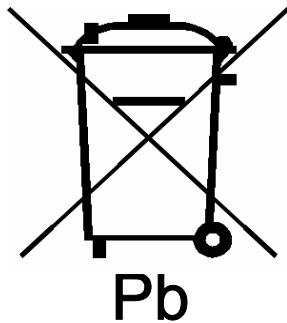
Power-Sonic batteries comply in full with the above detailed transportation provisions and are classified as NON Dangerous

14. Transport Regulation (continued)

			number must be indicated on all shipping documents <u>Special Provision:</u> A164: The battery has been prepared for transport so as to prevent: a) Short-circuit of the battery's terminals by packaging in a strong and sturdy carton box; AND/OR b) The battery has been fitted with a cover (made from ABS) which prevents contact with the terminals c) Unintentional activation is thus prevented
		All methods of transport	DO NOT PLACE VRLA BATTERIES INSIDE SEALED OR GAS-TIGHT ENCLOSURES. VRLA Batteries emit hydrogen gas which is highly flammable and will form explosive mixtures in air from approximately 4% to 76%. This can be ignited by a spark at any voltage, naked flames or other sources of ignition.

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 dustbin with the chemical symbol for lead below, together with the ISO return/recycling symbol.



16. Other Information

Products such as batteries are not in the scope of regulation which require 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 users 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.