

according to Regulation (EG) No. 1907/2006

1. IDENTIFICATION OF THE MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Trade Name:

VEMO SERVICE BATTERY

VEMO No.:

V99-17-0060

1.2. Informing department

VIEROL AG | Karlstraße 19 | 26123 Oldenburg | Germany

Telefon +49 441 - 210 20-0 | Telefax +49 441 - 210 20-111

1.3. Legal Remark (U.S.A.)

Material Safety Data Sheets (MSDS) are required by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to „article“. Because these batteries are defined as „articles“, they are exempted from the requirements of the Hazard Communication Standard.

1.4. Legal Remark (Canada)

This is not a controlled product under Workplace Hazardous Materials Information System (WHMIS). This product meets the definition of a “manufactured article” and is not subject to the regulations of the Hazardous Products Act.

1.5. Legal remark (EU)

These batteries are no “substances” or “preparations” according to Regulation (EC) No 1907/2006 EC, they are “articles” and no substances are intended to be released during handling. Therefore there is no obligation to supply a MSDS according to Regulation (EC) 1907/2006, Article 31.

1.6. General remark

This “Safety Information” is provided as a service to our customers. The information contained in this Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. The details presented are in accordance with our present knowledge and experiences, they cannot advise all possible situation.

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:

- 2.1. **They contain an electrolyte which contains diluted sulphuric acid. Sulphuric acid may cause severe chemical burns.**
- 2.2. **During the charging process or during operation they might develop hydrogen gas and oxygen, which under certain circumstances may result in an explosive mixture.**
- 2.3. **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 INGREDIENTS

Component	% Weight	EINECS# CAS#	Danger Symbol	R/S Phrases	EU Limits
<i>Metallic lead and lead compounds</i>	<i>60-70</i>	<i>231-100-4 7439-92-1</i>	<i>Toxic for reproduction T</i>	<i>R20/22 R33 R61 R62 R52/53 S53 S45 S60 S61</i>	<i>Lead in Air: 0,15 mg/m³ Lead in Blood: 60 g/ dl (Italy) 70 g/dl (EU)</i>
<i>Sulphuric Acid solution</i>	<i>20-30</i>	<i>231-639-5 7664-93-9</i>	<i>Corrosive C</i>	<i>R35 S26 S30 S45</i>	<i>toracic fraction 0,05 mg/m³</i>
<i>Thermoplastic Polymer</i>	<i>6-9</i>	–	–	–	–

Note: Batteries do not contain Cadmium (Cd) and Mercury (Hg)

4. FIRST AID MEASURES

This 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 of a medical doctor
after swallowing: drink lot of water immediately, swallow activated carbon, do not induce vomiting, seek advice of 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, seek advice of a medical doctor

5. FIREFIGHTING MEASURES

5.1. Suitable fire extinguishing agents:

CO₂ or dry powder extinguishing agents

5.2. Unsuitable fire extinguishing agents:

Water, if the battery voltage is above 120 V

5.3. Special protective equipment:

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

6. ACCIDENTAL RELEASE MEASURES

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

In the case of spillage, use a bonding agent, such as sand, to absorb spilt acid; use lime / sodium bicarbonate for neutralisation; dispose of with due regard to the official local regulations; do not allow penetration into the sewage 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 CONTROLS / PERSONAL PROTECTION

8.1. Lead and Lead compounds

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

8.2. Electrolyte (Sulphuric Acid diluted solution)

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

<i>Threshold value in workplace:</i>	<i>occupational exposure limits for sulphuric acid mist are regulated on a national basis.</i>	
<i>Hazard symbol:</i>	<i>C, corrosive</i>	
<i>Personal protective equipment:</i>	<i>Protective goggles, rubber or PVC gloves, acid resistant clothing, safety boots.</i>	
<i>CAS No:</i>	<i>7664-93-9</i>	
<i>R phrases:</i>	<i>R35 Causes severe chemical burns</i>	
<i>S phrases:</i>	<i>S16</i>	<i>Keep away from sparks or naked flame, No smoking</i>
	<i>S26</i>	<i>In case of contact with eyes rinse immediately with plenty of water and seek medical advice</i>
	<i>S45</i>	<i>In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).</i>

9. PHYSICAL AND CHEMICAL PROPERTIES

	Lead and Lead compounds	Electrolyte (diluted sulphuric acid solution)
Appearance		
<i>form:</i>	<i>solid</i>	<i>liquidW</i>
<i>colour:</i>	<i>grey</i>	<i>colourless</i>
<i>odour:</i>	<i>odourless</i>	<i>odourless</i>
Safety related data		
<i>solidification point:</i>	<i>327 °C</i>	<i>approx 35 to 60 °C</i>
<i>boiling point:</i>	<i>1740 °C</i>	<i>approx. 108 to 114 °C</i>
<i>solubility in water:</i>	<i>very low (0.15 mg/l)</i>	<i>complete</i>
<i>density (20°C):</i>	<i>11.35 g/cm³</i>	<i>1.2 to 1.35 kg/l</i>
<i>vapour pressure (20°C):</i>	<i>N.A.</i>	<i>N.A.</i>

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

10. STABILITY AND REACTIVITY

(referred to diluted sulphuric acid, density 1.2 ÷ 1.35 kg/l)

- 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 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) = 2.140 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 conclude 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 the 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 these Battery Lead Oxide compounds in a concentration of 100 mg/l have no adverse effect on fish and daphnia. A concentration of these 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. DISPOSAL CONSIDERATIONS

Spent lead acid batteries (EWC 160601) 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 battery are recycled or reprocessed.

To simplify the collection and recycling or reprocessing 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 inexperienced manner. This process is to be carried out by the processing companies only.

14. TRANSPORT INFORMATION

„Non Regulated“ Batteries

They are excepted from all regulations applicable to dangerous goods transportation, provided that the battery terminals are protected against short circuits and don't have an assigned UN number, since they comply with the following provisions:

14.1. International

14.1.1. IMDG Code (International Maritime Dangerous Goods)

special provision 238.1

special provision 238.2

14.1.2. IATA (International Air Transport Association) Dangerous Goods Regulation

packing instruction 872

special provision A67

14.2. Europe

ADR (Agreement for the transportation of Dangerous Goods by Road)

special provision 238 a)

special provision 238 b)

14.3. USA

U.S. Department of Transportation (DOT) hazardous materials regulations

§ 49 CFR 173.159a(d)

If the above provisions are not fulfilled, the more general classification of non spillable batteries apply:

14.4. Land Transport (ADR/RID, U.S. DOT)

UN N°: UN2800

Classification: Class 8

Proper Shipping Name: BATTERIES, WET, NON SPILLABLE electric storage

Packing Group ADR: not assigned

Label required: Corrosive

ADR/RID: New batteries are excepted from all ADR/RID (special provision 598).

14.5. Sea Transport (IMDG Code)

UN N°: UN2800

Classification: Class 8

Proper Shipping Name: BATTERIES, WET, NON SPILLABLE electric storage

Packing Group: not assigned

EmS-FIRE & SPILL: F-A, S-B

Label required: Corrosive

14.6. Air Transport (IATA-DGR)

UN N°:	UN2800
Classification:	Class 8
Proper Shipping Name:	BATTERIES, WET, NON SPILLABLE electric storage
Packing Group:	not assigned
Label required:	Corrosive

15. REGULATORY INFORMATION

The following legislation do not apply to lead-acid batteries:

- RoHS directive 2002/95/EC, updated by directive 2011/65/UE
- Low Voltage directive 73/23/EEC, updated by directive 2006/95/EC, if the voltage is < 75 V
- ELV directive 2000/53/EC
- EMC directive 89/336/EEC, updated by directive 2004/108/EC

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.



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

- R/S Phrases (indicative since this is not directly applicable to the product, but the electrolyte contained therein which represents the major risk of the product):
- R35 Can produce severe chemical burns.
 - S16 Keep away from sparks or naked flame - No smoking.
 - S26 In case of contact with eyes wash immediately with abundant quantity of water and seek medical advice.
 - S30 Do not put water on the product.
 - S45 In case of accident or if you feel unwell, seek medical advice immediately.

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.