

MATERIAL SAFETY DATA SHEET

ACCORDING TO: REGULATION (EC) No 1907/2006 AND ISO 11014-1

COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Date: Sept. 28, 1986

Revision date: 01.10.2018

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Commercial identification: Lead Acid Battery, filled with acid for electrical energy storage

Manufacturer: VIEROL AG, Karlstraße 19, 26123 Oldenburg, Germany
e-mail: info@vierol.com

Emergency telephone numbers: Clinic for toxicology at the Institute of Emergency Medicine N.I. Pirogov.:

02 / 9154 409 (during standard working hours except Saturday and Sunday) or
02 9154 346 (non-stop service).

2. HAZARDS IDENTIFICATION

1. Classification of the substance or mixture (Globally Harmonized System, GHS)

Substances and mixtures, which emit flammable gases when in contact with water: Category 2

Acute toxicity oral, dermal, inhalation): Category 1

Skin corrosion: Category 1

Serious eye damage: Category 1

Carcinogenicity: Category 1A

Germ cell mutagenicity: Category 2

Reproductive toxicity: Category 1A

Specific target organ toxicity – single exposure: Category 1

Specific target organ toxicity – repeated exposure: Category 1

2. GHS label elements

1) Pictograms



2) GHS Signal word: **Danger**

3) GHS Hazard statements

H261 In contact with water releases flammable gases

H314 Causes severe skin burns and eye damage

H318 Causes serious eye damage

H330 Fatal if inhaled

H341 Suspected of causing genetic defects

H350 May cause cancer

H360 may damage fertility or the unborn child

H370 Causes damage to organs

H372 Causes damage to organs through prolonged or repeated exposure

4) GHS Precautionary statements

P201 Before use obtain specific instructions

P202 Do not handle until you have read and understood all safety precautions

P223 keep away from any possible contact with water because of violent reaction and possible flash fire

P231 + P232 to be used under an inert gas. Protect from moisture.

P260 Do not breathe dust/fume/gas/mist/vapors/

P264 Wash thoroughly after use

P270 Do not eat, drink or smoke when using this product

P271 Use only outdoors or in a well ventilated place

P280 Use protective gloves/protective clothing/eye/face protection.

P281 Use personal protective equipment.

P284 [In case of inadequate ventilation] wear respiratory protection.

5) GHS First aid measures

P301+P330+P331 IF SWALLOWED: Rinse mouth. DO NOT induce vomiting.

P303 + P361 + P353 SKIN CONTACT (or hair): Immediately remove all contaminated clothing. Rinse skin with water/take a shower.

P304 + P340 INHALATION: Remove the victim to fresh air and place it in a position comfortable for breathing.

P305 + P351 + P338 EYE CONTACT: Flush eyes cautiously with water for several minutes. Remove the contact lenses, if any, and as far as possible. Continue rinsing.

P307 + P311 IF EXPOSED: Call a POISON CENTRE or a physician.

P308 + P313 IF EXPOSED or CONCERNED: Get medical advice/attention.

P310 Immediately call a POISON CENTRE or physician.

P314 If you feel unwell, look for medical advice/help.

P320 Urgent need for specialized treatment.

P335 + P334 Remove from the skin the sprinkled particles. Immerse in cold water/wrap in wet bandages.

P363 wash the contaminated clothing before reuse.

P370 + P378 In case of fire: Use the referred in Section 5 – fighting measures

6) Storage GHS

P402 + P404 Store in a dry place. Store in a closed container.

P403 + P233 Store in well-ventilated place. Keep container tightly closed.

P405 Store locked

7) Disposal according to GHS

P501 Dispose of all contents/container in accordance with the local/regional/national normative acts

8) Other hazards which do not result in classification (NFPA)

Antimony

Health - 2

Flammability - 2

Reactivity - 0

Arsenic

Health -2

Flammability-0

Reactivity -0

Calcium

Health -3

Flammability-1

Reactivity -2

Sulfuric acid

Health -3

Flammability-0

Reactivity -2

Lead

Health -1

Flammability-0

Reactivity -0

Tin

Health - 1

Flammability-3

Reactivity -0

Polypropylene

Health -1

Flammability-1

Reactivity -0

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components Specific chemical identity (generally accepted names)	OSHA permissible exposure limit	ACGIH TLV	Gama percentage of the average weight	Average	* SVHC? (REACH)
Lead, CAS № 7439921	0.05 mg / m ³	0.05 mg / m ³	48~56	52	No
Sulfuric acid, CAS № 7664939	1.00 mg / m ³	1.00 mg / m ³	33~44	39	No
Antimony, CAS № 7440360	0.50 mg / m ³	0.50 mg / m ³	0-4	<1	No
Arsenic, CAS № 7440382	0,01 mg / m ³	0,01 mg / m ³ ₃	<.01	-	No
Polypropylene CAS№ 9003070	-	-	5-8	6	No
Calcium CAS № 7440702	1,0 mg / m ³	1,0 mg / m ³	<1	<1	No

* SVHC: substances of very high concern (Regulation REACH in the EU)

4. FIRST AID MEASURES

Procedures in emergency situations and first aid: Contact with the internal components if the battery is opened, broken or spilled.

1. **Inhalation:** Move the victim to fresh air and provide medical oxygen/artificial respiration, if necessary. Seek medical attention.
2. **Eye contact:** immediately rinse with water for at least 15 minutes while holding eyelids open, seek medical attention.
3. **Skin contact:** Flush out the contact area with plenty of water for at least 15 minutes. Remove any contaminated clothing and get medical treatment if necessary.
4. **If swallowed:** Do not induce vomiting. If conscious, drink large quantities of water/milk. Seek medical attention. Never give anything orally to an unconscious person.

5. FIRE SAFETY MEASURES

Flash point: Not applicable	Flammable Limits			
		Hydrogen	Lower	Upper
	In air % of the volume (In charge)	(H ₂)	4.1%	74.2%

Fire extinguishing agent: Class ABC, CO₂ Halon ignition temperature: Polypropylene 675 F

Special firefighting procedures: the lead acid batteries do not burn or burn with difficulty. Do not use water on fires with the molten metal. Extinguish the fire with an agent that is suitable for the surrounding combustible materials. Cool the battery surface if exposed to fire to prevent rupture. Mists and vapors of the acid generated from the heat or fire are corrosive.

Use self-contained breathing apparatus and full protective equipment, closed in positive pressure mode.

Unusual fire and explosion hazards: hydrogen gas and vapors of sulfuric acid are generated during charging and/or damage to the polypropylene box. Ventilate the charging areas. The hydrogen gas could be explosive or flammable when mixed with air, oxygen or chlorine. Avoid all open flames/sparks and other sources of ignition near the battery. In order to reduce the risk for fire or explosion, keep sparks or other sources of ignition away from the battery and do not allow metallic materials to get in contact with the negative and positive terminals of the batteries at any time. Sulfuric acid reacts violently with water and organic substances.

6. ACCIDENT RELEASE MEASURES

Cleaning procedures: Stop the spill, if possible. Avoid contact with the spilled material. Limit the spill, isolate the dangerous area and prevent access. Limit the access to the side only for the emergency response. Neutralize with sodium bicarbonate, soda ash, lime or other neutralizing agent. Place the battery in suitable container for disposal. Dispose the contaminated material in accordance with the applicable local, state and federal regulations. Sodium bicarbonate, soda ash, sand, lime or other neutralizing agent should be kept on site for quick reaction to spills.

Personal precautions: Acid-resistant aprons, boots and protective clothing, safety glasses with side shields/face mask is recommended. Ventilate the closed places.

Precautions for the environment: The lead and its components and the sulfuric acid can pose a serious threat to the environment. Contamination of any water, soil and air must be prevented.

7. HANDLING AND STORAGE

Precautions for handling and storage: Keep away from open flames and during and immediately after charging. Ignition or recharge may cause or release toxic and dangerous gases and liquids, including hydrogen, sulfuric acid mist, sulfur dioxide, sulfur trioxide, stibine, arsine and sulfuric acid. Store the batteries in a cool, dry, well-ventilated place. Do not short circuit the battery terminals and do not remove the vent plugs during storage or recharge. Protect the batteries from physical damage.

Other precautions: Good personal hygiene and work practice are required. Restrain from eating, drinking or smoking in the work areas. Thoroughly wash your hands, face and neck before eating, drinking or smoking. Wash the contaminated clothing before reuse. The empty batteries contain hazardous residues of sulfuric acid.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

Respirator for the acid/gas is required when the permissible exposure limit is exceeded or the employee feels respiratory irritation. When the exposure levels are unknown or in case of firefighting wear self-contained breathing apparatus with full face mask that operates under positive pressure.

Ventilation: Must be provided in case of charging in closed places. Change the air every 15 minutes.

Local release: When the permissible exposure limit is exceeded.

Mechanical (General): Usual mechanical ventilation is recommended for stationary applications.

Protective gloves: Wear rubber or plastic acid-resistant gloves with elbow-length when filling batteries.

Eye protection: Safety glasses with side shields/face mask, recommended goggles.

Other protective clothing or equipment: Acid resistant rubber or plastic, apron, boots and protective clothing, safety shower and eyewash.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling point: Electrolyte at about 235 °F

Vapor pressure: Electrolyte 1 mm Hg @145,8°F

Specific gravity: Electrolyte 1.250-1.320 pH <2

Melting point: Polypropylene <320 °F

Percent volatile by volume: Not available

Vapor density: hydrogen (Air = 1) - 0,069

Electrolyte (Air = 1) - 3.4 of STP

Evaporation rate: Not available

Solubility in water: Electrolyte -100% Soluble

Reactivity in water: Electrolyte – water reactive

(1) **Appearance and odor**

Battery: box of polypropylene or hard rubber , hard.

Lead: Grey, metallic, solid.

Electrolyte: Liquid, colorless, oily liquid, irritating odor when making or charging the battery.

10. STABILITY AND REACTIVITY

Chemical stability and possibility of hazardous reactions: Stable Conditions to avoid:

High temperatures – the box decomposes at <320 °F.

Avoid overcharging and smoking or sparks near the battery surface and quick recharge.

Incompatibility (material to avoid): Sparks, flames. Keep the battery box away from strong oxidizers.

Hazardous decomposition products: Exposure blend of hydrogen/oxygen may occur during the battery charging. Combusting may produce carbon dioxide (CO₂) and carbon monoxide (CO). The molten metals release smoke and/or fumes that can be toxic or irritating to the respiratory organs.

Dangerous polymerization: Will not happen. Do not recharge.

11. TOXICOLOGICAL INFORMATION

Information on the likely routes of exposure: The main ways of lead exposure are ingestion or inhalation:

ACUTE:

INGESTION/INHALATION: Exposition to lead and its components may cause headache, dizziness, vomiting, abdominal cramps, fatigue, sleep disorders, weight loss, anemia, pain in the legs, arms and joints. Kidney damage and anemia may occur as a result of acute exposure.

CHRONIC:

INHALATION/INGESTION: Prolonged exposure to lead and its compounds can cause many of the symptoms of the short-term exposition and can cause damage to the central nervous system, leading to gastrointestinal disorders, anemia and sagging of the wrist.

12. ECOLOGICAL INFORMATION

Aquatic and terrestrial ecology toxicity: In groundwater and surface water lead forms compounds with anions such as hydroxides, carbonates, sulfates, phosphates and precipitates out of the water column.

Persistence and degradability: The lead may occur as sorbed ions or surface coatings on sediment mineral particles or may be carries in colloidal particles in surface water.

Bioaccumulative potential: The lead (when in dissolved form) is bioaccumulated from plants and animals, both aquatic and terrestrial.

Mobility in soil: Most of the lead remains in the soil as a result of low mobility. Lead may be immobilized by ion exchange with hydrous oxides or by chelation with humic acids or fulvic acids in soil.

13. DISPOSAL CONSIDERATIONS

Disposal methods: Lead acid batteries are completely recyclable. Bring back the scrap batteries to the distributor, manufacturer or lead recycling plant. For additional information about returning batteries to 'Monbat' Plc, call +359 96 393 101. To neutralize spills, place the residues in acid-resistant containers with sand or dirt. Contact the local environmental officials to find the disposal requirements.

14. TRANSPORT INFORMATION

ADR/RID (road/rail):

UN number: 2794

Proper shipping name: Batteries, wet, filled with acid

Class: 8

Packing group: not applicable

Packing instructions: P801, P801a

Classification code: C11

Special provisions: 295, 598

Special provision 295:

Batteries need not be individually marked and labelled if the pallet bears the appropriate mark and label.

Special provision 598:

The following are not subject to the requirements of ADR: (a) New storage batteries when:

- they are secured in such a way that they cannot slip, fall or be damaged;
- they are provided with carrying devices, unless they are suitably stacked, e.g. on pallets;
- there are no dangerous traces of alkalis or acids on the outside;

– they are protected against short circuits; (b) Used storage batteries when:

- their cases are undamaged;
- they are secured in such a way that they cannot leak, slip, fall or be damaged, e.g. by stacking on pallets;
- there are no dangerous traces of alkalis or acids on the outside of the articles;
- they are protected against short circuits.

"Used storage batteries" means storage batteries carried for recycling at the end of their normal service life.

ICAO/IATA (air):

UN number: 2794

Proper shipping name: Batteries, wet, filled with acid

Class: 8

Packing group: not applicable

Packing instructions: 800

Special provisions: A51, A164

IMDG (sea):

UN number: 2794

Proper shipping name: Batteries, wet, filled with acid

Class: 8

Packing group: not applicable

Marine pollutant: No

Packing instructions: P801

Special provisions: 295

15. REGULATORY INFORMATION

- **COMMISSION REGULATION (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)**
- **Regulation (EC) No 1272/2008 of the European Parliament and the Council of 16.12.2008 concerning the classification, labeling and packaging of the substances and mixtures.**
- **Regulation (EC) 453/2010EC amending Regulation /EC/ 1907/2006 of the European Parliament and the Council of 18.12.2006 concerning the registration, evaluation, authorization and restriction (REACH) and the relevant international rules for transport.**

16. ADDITIONAL INFORMATION

The above information is correct to the best of our knowledge and represents the best currently available to us information.

Despite this, 'Monbat' Plc **MAKES NO WARRANTIES OF MERCHANTABILITY OR ANY OTHER WARRANTY**, express or implied, with regard to this information and assumes no obligations arising from its use.

The users should make their own investigations to determine the suitability of the information for specific purposes. Although reasonable precautions were taken **DURING THE DATA PREPARATION**, they are offered solely for your information, consideration and investigation.

This material safety data sheet gives recommendations for safe handling and use of this product. It does not and cannot give advices of all possible situations. Therefore, your specific use of this product should be evaluated to determine whether additional measures are needed.