

	Material Safety Data sheet (MSDS)	Creation date	July 19, 2024
		Revision date	N/A

INFORMATION FOR THE SAFE HANDLING OF LEAD-ACID BATTERIES

1. IDENTIFICATION OF PRODUCT AND COMPANY

PRODUCT NAME	Lead acid battery
TRADE NAME	Rhino battery Traction : DIN (PzS), BS (PzB), BCI (USI), PzV, PzVB also for EX-version of all mentioned traction cells Stationary : OPzS, OPzV
MANUFACTURER	TAB d.d. Slovenia, Sebang Global Battery CO.,Ltd South Korea
DISTRIBUTOR	Battelec inc 800 Croisetiére st, St-Jean-Sur-Richelieu, Qc, Can 1-877-271-2291 info@battelec.ca
EMERGENCY PHONE NUMBER	In case of emergency call 911

2. POTENTIAL HAZARDS

A. HAZARDS CLASSIFICATION

PHYSICAL HAZARDS

Not classified

HEALTH HAZARDS

Acute toxicity	Category 4 (inhalation)
Skin corrosion/irritation	Category 1
Carcinogenicity	Category 1B
Germ cell mutagenicity	Category 2
Specific target organ toxicity - single exposure	Category 1
Specific target organ toxicity - repeated exposure	Category 1

ENVIRONMENTAL HAZARDS

Not classified

B. GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

PICTOGRAMS



SIGNAL WORD

DANGER

HAZARDS STATEMENTS

H332	Harmful if inhaled
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H350	May cause cancer (inhalation)
H341	Suspected of causing genetic defects
H370	Specific target organ toxicity – single exposure; Respiratory tract irritation
H372	Causes damage to organs (Hematopoietic system, kidney, central nervous system)
H362	May cause harm to breast-fed children

PRECAUTIONARY STATEMENTS

[Prevention]

P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P271	Use only outdoors or in a wellventilated area
P260	Do not breathe dust/fume/gas/mist/vapours/spray
P264	Wash hands thoroughly after handling
P280	Wear protective gloves/protective clothing/eye protection/face protection
P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood
P281	Use personal protective equipment as required
P270	Do not eat, drink or smoke when using this product

[Response]

P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P312	Call a POISON CENTER or doctor/physician if you feel unwell
P301+P330+P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P363	Wash contaminated clothing before reuse.
P310	Immediately call a POISON CENTER or doctor/physician
P321	Specific treatment (see ... on this label)
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P308 + P313	IF exposed or concerned: Get medical advice/attention
P307+P311	IF exposed: Call a POISON CENTER or doctor/physician
P314	Get medical advice/attention if you feel unwell

[Storage]

P405	Store locked up
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[Disposal]

P501

Dispose of contents/container in accordance with local/regional/national regulations

C. OTHER HAZARDS WHICH DO NOT RESULT IN CLASSIFICATION (E.G. DUST EXPLOSION HAZARDS)

NFPA/HMIS

Rating Health=3, Flammability=0, Instability=1

(0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name / Synonym	CAS No. or ID	Content (%)
Lead	7439-92-1	68 – 70
Antimony	7440-36-0	< 1
Electrolyte (sulfuric acid / water / solution)	7664-93-9	23 – 26
Polypropylene / PP Resin	9003-07-0	2 – 4
Separator	Not available	2 – 3

- 1) Contents may vary due to performance data of the battery/cell
- 2) Lead metal (CAS 7439-92-1) is classified as a substance of very high concern under REACH
- 3) Composition of active mass depends on the state of charge
- 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

4. FIRST AID MEASURES

A. EYE CONTACT

If a battery ruptures, do not rub or scratch exposed eye. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used.
GET MEDICAL ATTENTION IMMEDIATELY

B. SKIN CONTACT

If a battery ruptures, do not rub or scratch exposed skin. If liquid get on the skin, immediately flush the contaminated skin with water for at least 15 minutes. If liquid penetrate through the clothing, immediately remove the clothing and shoes under a safety shower and continue to wash the skin for at least 15 minutes.
GET MEDICAL ATTENTION IMMEDIATELY

C. INHALATION

If a battery ruptures, move to fresh air in case of accidental inhalation of mist. If breathing has stopped, perform artificial respiration. If breathing is difficult, give oxygen.
GET MEDICAL ATTENTION AS SOON AS POSSIBLE

D. INGESTION

If chemicals solutions of a battery have been swallowed and the person is conscious, give one glass of water. Vomiting may occur spontaneously, but Do NOT induce vomiting. Never give anything by mouth to an unconscious person.
GET MEDICAL ATTENTION IMMEDIATELY

E. MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE OR DELAYED

EYES	If a battery ruptures, direct contact with the liquid or exposure to vapors or mists may cause tearing, redness, swelling, corneal damage and irreversible eye damage. Splashes in the eyes will cause severe burns
SKIN	Direct contact with internal components of a battery can be severely irritating to the skin and may result in redness, swelling, burns and severe skin damage. Skin contact may aggravate an existing dermatitis condition
INHALATION	If a battery ruptures, may be harmful or fatal if inhaled in a confined area. May cause severe irritation and burns of the nose, throat and respiratory tract
INGESTION	Causes serious burns of the mouth or perforation of the esophagus or stomach. May be fatal if swallowed

* Lead may causes toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to lead can produce target organs damage

F. INDICATION OF IMMEDIATE MEDICAL ATTENTION AND NOTES FOR PHYSICIAN

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition

5. FIRE FIGHTING MEASURES**A. SUITABLE (AND UNSUITABLE) EXTINGUISHING MEDIA**

Use extinguishing media appropriate for surrounding fire.
If a battery ruptures, use dry chemical, soda ash, lime, sand or carbon dioxide

B. SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

Lead, lead compounds and sulfuric acid fume may be released during a fire involving the product

C. SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS

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

D. FIRE AND EXPLOSION HAZARD

Not flammable
Battery may rupture due to pressure buildup when exposed to excessive heat or its container may melt and may be result in the release of corrosive materials

6. ACCIDENTAL RELEASE MEASURES**A. NECESSARY MEASURES AND PROTECTIVE GEAR TO PROTECT HUMANST**

If a battery ruptures, avoid contact with skin, eyes and clothing. Do not touch

spilled material. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection)

B. NECESSARY MEASURES TO PROTECT ENVIRONMENT

Notify authorities and appropriate federal, state, and local agencies. Prevent the product from spreading into the environment. Avoid direct discharge into drains

C. METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

- SMALL SPILLS:** Collect all released material in a plastic lined metal container
If necessary neutralize the residue with a dilute solution of sodium carbonate
Wash affected area
- LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by building a dike
Absorb with dry earth, sand or other non-combustible material. Neutralize the residue with a dilute solution of sodium carbonate
Dispose of all contaminated materials in accordance with current local regulations

7. HANDLING AND STORAGE

A. PRECAUTIONS FOR SAFE HANDLING

Protect from physical damage

B. CONDITIONS FOR SAFE STORAGE (INCLUDING ANY INCOMPATIBILITIES)

Avoid contact with eyes.
Store in a cool, dry, ventilated area away from sources of heat, moisture, incompatible products and direct sunlight.
Have emergency equipment (for fires, spills, leaks, etc.) readily available
Charged lead-acid batteries do not freeze up to -50°C/-58°F

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. LEAD AND LEAD COMPOUNDS

No exposure to lead and lead compounds during normal conditions of use

B. ELECTROLYTE (SULPHURIC ACID)

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

C. OCCUPATIONAL EXPOSURE LIMIT(S), BIOLOGICAL EXPOSURE STANDARD

OSHA-PEL	0.05 mg/m ³ (Lead), 1 mg/m ³ (Sulfuric acid), 0.5 mg/m ³ (Antimony)
ACGIH-TLV	TWA 0.05 mg/m ³ (Lead), TWA 0.2 mg/m ³ (Sulfuric acid), TWA 0.5 mg/m ³ (Antimony)
CNESST-OHSA	0.05 mg/m ³ (Lead), 0.2 mg/m ³ (Sulfuric acid), 0.5 mg/m ³ (Antimony)

D. APPROPRIATE ENGINEERING CONTROLS

Use local exhaust ventilation if necessary to control airborne mist and vapor

E. INDIVIDUAL PROTECTION MEASURES

Respiratory protection	If significant mists or aerosols are generated an approved respirator is recommended. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection
Eye protection	Wear safety glasses with side shields (or goggles)
Hand protection	Wear chemical resistant gloves. Gloves should be replaced immediately if signs of degradation are observed
Body protection	Use good work and personal hygiene practices to avoid exposure. Consider the provision in the work area of a safety shower and eyewash. Always wash thoroughly after handling chemicals

F. HAZARD STATEMENTS

H314	Causes severe burns and eye damage
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G. PRECAUTIONARY STATEMENTS

P102	Keep out of reach of children
P103	Read label before use
P260	Do not breathe dust/fume/ gas/mist/vapours/spray
P264	Wash thoroughly after handling
P280	Wear protective gloves/protective clothing/eye protection/face protection
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing Rinse skin with water/shower
P363	Wash contaminated clothing before reuse
P310	Immediately call a POISON CENTER or doctor/physician
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P405	Store locked up
P501	Dispose of contents/container in accordance with local/regional/ national/ international regulation (to be specified)
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P309+P315	IF exposed or if you feel unwell, get immediate medical advice/attention

9. PHYSICAL AND CHEMICAL PROPERTIES

	Lead and lead compounds	Electrolyte (diluted sulfuric acid, 30 to 38.5 %)
APPEARANCE		
FORM	Solid	Liquid
COLOUR	Grey	Colourless
ODOR	Odourless	Odourless
SAFETY-RELATED DATA		
SOLIDIFICATION POINT	327 °C /620°F	-35 to -60°C/ -31 °F to -79 °F
BOILING POINT	1740 °C/3164°F	Approx. 108 to 114°C/225 to 237°F

SOLUBILITY IN WATER	Very low (0,15 mg/l-0,00002oz/gal)*	Complete
DENSITY/SPECIFIC GRAVITY (20°C)	11,35 g/cm ³ -6,56oz/cu	1,17 à 1,3 g/cm ³ -0.68 to 0.75oz/cu
VAPOUR PRESSURE (20°C)	N.A.	N.A.
PH	N.A.	< 1
FLAMABILITY	N.A.	N.A.
UPPER/LOWER FLAMMABILITY OR EXPLOSIVE LIMITS	Non-flammable	Non-flammable
SOLUBILITY	Really poor *	Soluble in water
VAPOR DENSITY	N.A.	N.A.
MOLECULAR WEIGHT	207.2	Mixture

*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

A. CHEMICAL STABILITY

Stable at normal temperatures and storage conditions

B. POSSIBILITY OF HAZARDOUS REACTIONS

Hazardous polymerization will not occur

C. CONDITIONS TO AVOID (STATIC DISCHARGE, SHOCK, VIBRATION ETC.)

Overcharging. Sources of ignition. Mechanical impact. Contact with incompatible chemicals

D. SUBSTANCES TO AVOID

If a battery ruptures, avoid contact with organic materials and alkaline materials

E. HAZARDOUS DECOMPOSITION PRODUCTS

Lead, Lead compounds and sulfuric acid fumes may be released during a fire involving the product

11. TOXICOLOGICAL INFORMATION

A. INFORMATION ON THE LIKELY ROUTES OF EXPOSURE

Inhalation	Corrosive, severe irritation and burns
Ingestion	Serious burns
Eye/Skin	
Eye	Tearing, redness, swelling, corneal damage, irreversible eye damage and severe burns
Skin	Redness, swelling, burns and severe skin damage

B. DELAYED AND IMMEDIATE EFFECTS AND ALSO CHRONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE

Acute toxicity (possible route of exposure) :

Oral (LD50)	Rat	2140 mg/kg - 0,034 oz/lb (Sulfuric acid), 7000 mg/kg – 0.112 oz/lb (Antimony)
Skin (LD50)	Not available	

Inhalation (LC50)	Rat	0,094 mg/L - 0,00001 oz/gal (4hr) (dust/mist)
Skin corrosion/irritation	cat 1	
Serious eye damage/irritation	cat 1	
Respiratory sensitization	Not available	
Skin sensitization	Not available	
Carcinogenicity	cat 1B	
		ACGIH Group A2, IARC Group 1 (Mist containing sulfuric acid)
		* Note: Sulfuric acid mist is not expected under normal use of the product.
		ACGIH Group A3, IARC Group 2B (Lead), IARC Group 3 (Polypropylene)
Germ cell mutagenicity	cat 2	
Reproductive toxicity	Not available	
STOST-single exposure	cat 1	
		Respiratory
STOST-repeated exposure	cat 1	
		Hematopoietic system, kidney, central nervous system, peripheral nervous system, cardiovascular system, immune system, respiratory
Aspiration hazard	Not available	

C. NUMERIC MEASURE OF TOXICITY (SUCH AS ACUTE TOXICITY ESTIMATES) – ATEMIX

Oral (LD50)	Rat	> 5,000 mg/ kg – 0.08 oz/lb
Skin (LD50)	Not available	
Inhalation (LC50)	Rat	2,51 mg/L – 0,00034 oz/gal (4hr) (dust/mist)

12. ECOLOGICAL INFORMATION

A. AQUATIC/TERRESTRIAL ECOLOGY TOXICITY

Fish (LC50)	Not available.
Daphnia (EC50)	Not available.
Algae (EC50)	Not available

B. PERSISTENCE AND DEGRADABILITY

Persistence	Not available
Degradability	Not available

C. BIOACCUMULATIVE POTENTIAL

Not available

D. MOBILITY IN SOIL

Not available

E. OTHER HAZARDOUS EFFECTS

	Not available	
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 - 0,034 oz/lb

Lead and lead compounds

LC50 (inhalation, rat) = 510 mg/m³/2h –
0.00051oz/ft³/2h

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

13. DISPOSAL CONSIDERATIONS

A. DISPOSAL METHODS

Dispose of in accordance with local, state, and federal regulations. Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements

B. PRECAUTIONS (INCLUDING DISPOSAL OF CONTAMINATED CONTAINER OR PACKAGE)

Since emptied containers retain product residue, follow label warnings even after container is emptied

14. TRANSPORT REGULATION

The information in this section is for reference only and should not take the place of a shipping paper (BOL).

Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation

A. UN NUMBER

Vented	UN 2794
Non spillable	UN 2800

B. UN PROPER SHIPPING NAME

Vented	BATTERIES, WET, FILLED WITH ACID
Non spillable	BATTERIES, WET, NON- SPILLABLE

C. TRANSPORT HAZARD CLASS(ES)

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D. PACKING GROUP (IF APPLICABLE)

Not Applicable

E. PACKAGING INSTRUCTION

Land transport	P801
Sea transport	P801
Air transport	P870

F. MARINE POLLUTANT SUBSTANCES (APPLICABLE/NOT APPLICABLE)

Not Applicable

G. SPECIAL PRECAUTIONS FOR USER

Vented	Not available
Non spillable	Special Provision 39

15. REGULATORY INFORMATION

In accordance with 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, industrial lead-acid batteries may have to be labelled with the hazard symbols described below



Danger
Electrical accumulators



Dangerous voltage
electrical risk



No smoking,
no open flame



Wear safety
goggles



Observe
operating
instructions



Explosion hazards
Avoid short circuit

Labelling may 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.

A. INVENTORIES

DSL/CANADA	Listed
TSCA/US	Listed
EINECS/EU	Listed (EINECS No. 231-100-4(Lead), 231-639-5(Sulfuric acid))
ENCS/JAPAN	Listed (ENCS No. 1-527(Lead), 1-430(Sulfuric acid))
AICS/AUSTRALIA	Listed
IECSC/CHINA	Listed
PICCS/PHILIPPINES	Listed
KECI/S.KOREA	Listed (KE-21887(Lead), KE-32570(Sulfuric acid))

B. INTERNATIONAL ENVIRONMENTAL AGREEMENT

PIC	Not listed
POPs	Not listed
Ozone depletion	Not listed
EU	Directive 67/548/EEC on the classification, packaging, and labelling of dangerous substances, Annex I
Classification	C; R35
Risk Phrases	R35
Safety Phrases	S1/2, S26, S30, S45

C. U.S. FEDERAL, HEALTH AND ENVIRONMENT) AND U.S. FEDERAL, RIGHT-TO-KNOW

CERCLA Section 103 (40 CFR 302.4)

10lb (4.54 kg) (Lead), 1000 lb (453.6 kg) (Sulfuric acid)

EPCRA (SARA Title III) Section 302 (EHS -TPQ)

1000 lb (453.6 kg) (Sulfuric acid)

EPCRA (SARA Title III) Section 304 (EHS - Reporting Quantities)

1000 lb (453.6 kg) (Sulfuric acid)

EPCRA (SARA Title III) Section 313 - Toxic chemical release reporting

Sulfuric acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

OSHA Specifically Regulated Substances (29 CFR 1910.1001-.1052)

Not applicable

D. CANADA REGULATORY INFORMATION

WHMIS Ingredient Disclosure List

Regulated

NOTE: The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the Safety Data Sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION**A. SUBSTANCES OF VERY HIGH CONCERN (SVHC)**

Customers will receive the required information if an updated publication may add a substance relevant for our products to the list of SVHC's. On 19 December 2012, four Lead compounds used in the process of battery manufacturing – Lead Monoxide, Lead Tetroxide, Tetralead Trioxide Sulphate and Pentalead Tetraoxide Sulphate – were added to the list of Substances of Very High Concern. As of June 27 2018, Lead Metal was added to the SVHC list as well.

Irrespective of the battery design (Flooded, Vented, Sealed, Gel, AGM) all lead based batteries contain Lead Metal (CAS Nr.: 7439-92-1). The content varies but exceeds the notification threshold of 0,1% w/w.

Batteries ready for use do not contain Oxides or Sulphates that are classified SVHC.

Dry Batteries/dry cells (dry charged plates, delivered without electrolyte) contain more than 0,1% of Lead Monoxide. Lead Monoxide (CAS Nr.: 1317-36-8) is listed as a substance of very high concern. Once the batteries / cells are filled with electrolyte all Lead Monoxide is transformed and the presence of Lead Monoxide has ended.

B. GHS LABELS

GHS regulation describes classification and labelling of chemicals and preparations. GHS is not a regulation that describes labelling requirements for products such as Lead Acid Batteries.

The six pictograms on batteries target to provide safety information and are based on an international standard (EN 50342). These labels remain unaffected.

C. HAZARD STATEMENTS (H-STATEMENTS)

Hazard statements used in this document:

H314	Causes severe skin burns and eye damage
H360	May damage fertility or the unborn child
H362	May cause harm to breast-fed children
H332	Harmful if inhaled
H302	Harmful if swallowed
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long-lasting effects

D. SOURCE OF DATA

Guideline for Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
 EC-ECB, International Uniform Chemical Information Database (IUCLID)
 Hazardous Substances Data Bank (HSDB)
 Registry of Toxic Effects of Chemical Substances (RTECS)
 National Institute of Technology and Evaluation -NITE (Japan)
 NFPA 704 Standard System for the Identification of the Hazards of Materials for Emergency Response
 International Chemical Safety Cards(ICSC)(<http://www.nihs.go.jp/ICSC>)
 3E Company/Ariel WebInsight DB

E. THE DATE OF PREPARATION OF THE MSDS

July 19, 2024

F. THE DATE OF PREPARATION OF THE LATEST REVISION

N/A

G. GENERAL

The above information is believed to be correct but does not propose to be all inclusive and shall be used only as a guide. Battelec inc. shall not be held liable for any damage resulting from handling or from contact with the above product. Each individual should make a determination as to the suitability of the information for their particular purpose(s). Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product which may not be covered by this MSDS. The user is responsible for full compliance.