



SDS SAFETY DATA SHEET (ENG)

Valve-Regulated Sealed Lead-Acid Batteries - VRLA (AGM / GEL) ZENITH Series

NOTE: A safety data sheet is not required for this product under Article 31 of the REACH Regulation; this product safety information sheet has been created on a voluntary basis.

SECTION 1: Identification of the Substance/Mixture and the Company/Enterprise

1.1 Product Identifier

Product Trade Name: Sealed, valve-regulated lead-acid battery—VRLA (AGM/GEL). Models included: Zenith ZGL Series Batteries, Zenith ZL Series, Zenith ZLM Series, Zenith ZPC Series, Zenith ZGEL Series, Zenith ZLS Series.

Product Type: Traction/stationary batteries, articles containing a sealed mixture or substance.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Primary use category: Rechargeable electric battery for traction, light-duty traction, and stationary use; industrial use; professional use.

Use of the substance/mixture: Standby: telecommunications; UPS; alarm and security systems; ; utility switching
Cyclic: golf carts, portable tools, portable lighting, wheelchairs, remote telemetry
Energy storage: photovoltaic energy systems (PVES); wind turbines

Uses Not Recommended

Usage restrictions: Any use other than that intended; disassembly, drilling, or tampering with the extruded monoblock.

1.3 Information on the supplier of the safety data sheet

Company Name: U.B.S. UNION BATTERY SERVICE UNIPERSONALE S.R.L.

Address: Via A. Volta snc, 25015 Rivoltella - Desenzano del Garda (BS) - Italy

Phone: +39 030 99 04 570

Email: info@unionbatteryservice.it

Website: www.unionbatteryservice.it

1.4 Emergency phone number

Emergency number: Italy, Single Emergency Number: 112

Country/Region	Organization	Emergency number
Italy	Bergamo Poison Control Center. Papa Giovanni XXIII Hospital. Piazza OMS - World Health Organization, 1 24127 Bergamo.	800 88 33 00
	Verona Poison Control Center. Verona Integrated Hospital System. Piazzale Aristide Stefani, 1 37126 Verona.	800 011 858
	Milan Poison Control Center. Niguarda Ca' Granda Hospital. Piazza Ospedale Maggiore 3, 20162 Milan.	02 6610 1029
	Pavia Poison Control Center. CAV National Toxicology Information Center. Maugeri Clinical and Scientific Institutes, S.p.A. Via Salvatore Maugeri, 10 27100 Pavia.	0382 24444

SDS SAFETY DATA SHEET (ENG)**ZENITH Series VRLA (AGM/GEL) Sealed Valve-Regulated Lead-Acid Battery**

Country/Region	Organization	Emergency Number
	Rome Poison Control Center. CAV "A. Gemelli" Polyclinic. Department of Clinical Toxicology, Catholic University of the Sacred Heart. Largo Agostino Gemelli, 8 00168 Rome.	06 305 4343
	Rome Poison Control Center. "Umberto I" Polyclinic Poison Control Center. University of Rome. Viale del Policlinico, 155 00161 Rome.	06 4997 8000
	Florence Poison Control Center. "Careggi" Hospital, Department of Medical Toxicology. Clinical Toxicology Unit. Largo Brambilla, 3 50134 Florence.	055 794 7819
	Rome Poison Control Center. Poison Control Center "Bambino Gesù Children's Hospital," Emergency and Admissions Department (DEA). Piazza Sant'Onofrio, 4 00165 Rome.	06 6859 3726
	Foggia Poison Control Center. Foggia University Hospital. Viale Luigi Pinto, 1, 71122 Foggia.	800 183 459
	Naples Poison Control Center. "A. Cardarelli" Hospital. Via A. Cardarelli, 9 80131 Naples.	081 54 53 333

SECTION 2: Hazard Identification

Under normal conditions of use, the article (sealed battery) does not pose any hazards from contact or inhalation. The hazards listed below relate to the potential leakage of the internal acidic electrolyte or the release of gas in the event of breakage, short circuit, or severe overcharging.

2.1 Classification of the Substance or Mixture

Skin corrosion, Category 1A (H314) – Refers to the electrolyte (sulfuric acid). Reproductive toxicity,

Category 1A (H360FD) – Refers to lead compounds.

Specific target organ toxicity—repeated exposure, Category 1 (H372)—Refers to lead. Hazardous to the aquatic environment,

Acute Cat. 1 (H400) / Chronic Cat. 1 (H410).

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute Tox. 4 (oral)	H302
Skin Corrosion 1A	H314
Eye Damage 1	H318
Carcinogen 1B	H350
Repr. 1A	H360
STOT RE 1	H372
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Adverse physicochemical, human health, and environmental effects

Classification provided in the event of exposure to the battery's internal components.

2.2 Label Elements

Labeling in accordance with EC Regulation No. 1272/2008 [CLP]

Hazard pictograms (CLP):



Warning (CLP):

Danger

Contains:

Sulfuric acid (electrolyte), Lead (Pb); Lead dioxide (PbO₂), Lead oxide (PbO)

Hazard Statements (CLP):

H302 - Harmful if swallowed.

H314 - Causes severe skin burns and serious eye damage. H350 - May cause cancer.

H360FD - May impair fertility or harm the unborn child.

H372 - Causes organ damage through prolonged or repeated exposure. H410 - Very toxic to aquatic life with long-lasting effects.

Precautionary Statements (CLP):

P201 - Obtain specific instructions before use.

P202 - Do not handle until you have read and understood all warnings. P301+P330+P331 - IF SWALLOWED: rinse mouth. DO NOT induce vomiting.

P303+P361+P353 - IF ON SKIN (or hair): Immediately remove all contaminated clothing. Rinse skin.

P304+P340 - IF INHALED: Move the affected person to fresh air and keep them at rest in a position that promotes breathing.

P305+P351+P338 - IF IN EYES: Rinse thoroughly for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P501 - Dispose of the product/container at a hazardous or special waste collection site, in accordance with local, regional, national, and/or international regulations.

2.3 Other Hazards

Other hazards not included in the classification:

Mechanical Properties

VRLA batteries can be heavy. Proper manual handling techniques and/or mechanical lifting aids (e.g., forklifts) must be used.

Electrical Characteristics

VRLA batteries can store large amounts of electrical energy capable of generating very high discharge currents and causing severe electric shocks in the event of a short circuit at the terminals.

Chemical Characteristics

- VRLA batteries pose no chemical hazards during normal operation, provided that recommendations regarding handling, storage, transport, and use are followed.
- VRLA batteries emit hydrogen gas, which is highly flammable and forms explosive mixtures in the air at concentrations ranging from approximately 4% to 76%. These mixtures can be ignited by a spark at any voltage, by open flames, or by other ignition sources.
- If the battery is damaged and the internal components are exposed, hazards may exist that require special attention.

This substance/mixture:

- does not meet the PBT criteria of the REACH Regulation, Annex XIII
- does not meet the vPvB criteria of the REACH Regulation, Annex XIII
- does not contain PBT and/or vPvB substances $\geq 0.1\%$, as assessed in accordance with Annex XIII of REACH

SECTION 3: Composition/Information on Ingredients

3.1 Mixtures

Name	Product Identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
lead (Pb) Substance listed as a REACH Candidate Substance (Lead) Substance with a Community occupational exposure limit	CAS Number: 7439-92-1 EC number: 231-100-4 EC Index No.: 082-013-00-1	40–50	Repr. 1A, H360FD Lact., H362 STOT RE 1, H372 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=100)
Lead dioxide	CAS Number: 1309-60-0 EC Number: 215-174-5	15–25	Acute Tox. 4 (oral), H302 (ATE=500 mg/kg body weight) Acute Tox. 4 (inhalation: vapor), H332 Repro. 1A, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
sulfuric acid (electrolyte) Substance with a Community occupational exposure limit (Note B)	CAS Number: 7664-93-9 EC Number: 231-639-5 EC Index No.: 016-020-00-8	10 – 20	Skin Corr. 1A, H314
Fiberglass wool Substance with an EU occupational exposure limit	CAS Number: 65997-17-3 EC Number: 266-046-0	1–3	Carc. 2, H351
Tin (Sn) Substance with an EU occupational exposure limit	CAS Number: 7440-31-5 EC Number: 231-141-8 EC Index No.: 231-141-8 REACH No.: 01-2119486474-28	0 – 1	Not classified
Casing and separators (PP / ABS / Glass fiber)	N/A	8 – 12	Not classified

Specific concentration limits:

Name	Product identifier	Specific concentration limits (%)
Lead (Pb)	CAS Number: 7439-92-1 EC Number: 231-100-4 EC Index No.: 082-013-00-1	(0.03 ≤ C ≤ 100) Repr. 1A; H360FD
Lead dioxide	CAS Number: 1309-60-0 EC Number: 215-174-5	(0.5 ≤ C ≤ 100) STOT RE 2; H373 (2.5 ≤ C ≤ 100) Repr. 2; H361f
Sulfuric acid (electrolyte)	CAS Number: 7664-93-9 EC Number: 231-639-5 EC Index No.: 016-020-00-8	(5 ≤ C < 15) Eye Irrit. 2; H319 (5 ≤ C < 15) Skin Irrit. 2; H315 (15 ≤ C ≤ 100) Skin Corrosion 1A; H314

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ZENITH Series VRLA (AGM/GEL) Sealed Valve-Regulated Lead-Acid Battery

Notes:

Plate grid:	Lead (Pb) Tin (Sn)
Active materials:	Lead monoxide and lead dioxide Battery
electrolyte:	Sulfuric acid
Case material:	PP / ABS Standard grade, UL94:HB, Flame-retardant (FR) grade, UL94:V0
Separator material:	Glass, oxide, chemicals

SECTION 4: First Aid Measures

4.1 Description of First Aid Measures

General First Aid Measures	This information applies only if the VRLA battery has been damage, is defective, and there is direct contact between people and the internal components. Do not give anything by mouth to an unconscious person. If you feel unwell, consult a doctor (if possible, show them the label). First aid responders must wear appropriate protective clothing to prevent exposure (see Section 8).
First Aid Measures in Case of Inhalation	If a battery is physically damaged, move to fresh air if fumes are . Transport the injured person to fresh air and keep them at rest in a position that facilitates breathing. If symptoms develop, seek medical attention.
First Aid Measures in Case of Skin Contact	Immediately remove contaminated clothing. Immediately rinse thoroughly with water for 15 minutes or take a shower. Immediately contact a POISON CONTROL CENTER or a doctor.
First Aid Measures in Case of Eye Contact	Rinse immediately with plenty of water (for at least 15 minutes). Make sure the creases of the eyelids are thoroughly rinsed with water. Remove any contact lenses if it is easy to do so. Continue rinsing. Seek medical attention immediately.
First Aid Measures in Case of Ingestion	Rinse the mouth. DO NOT induce vomiting. Give 100–200 ml of water to drink. Contact a POISON CONTROL CENTER or a doctor immediately.

4.2 Major symptoms and effects, both acute and delayed

Symptoms/effects	The risk of exposure exists only if the battery cell is mechanically, thermally, or electrically misused and the seal is compromised. If this occurs, exposure to the electrolyte solutions contained in the battery cell may occur through inhalation, eye contact, skin contact, or ingestion.
Symptoms/effects in case of skin contact	Causes severe burns. Direct contact with the internal components of a battery can cause severe skin irritation and redness, swelling, burns, and other serious skin damage.
Symptoms/effects in case of eye contact	Causes serious eye damage. If a battery is physically damaged, direct contact with the liquid or exposure to vapors or fumes may cause lacerations, redness, swelling, corneal damage, and irreversible eye damage.
Chronic symptoms	Causes organ damage with prolonged or repeated exposure. May cause cancer. May impair fertility or harm the fetus.

4.3 Indication of the need to seek immediate medical attention and special treatment

Symptomatic treatment.

SECTION 5: Firefighting Measures**5.1 Extinguishing media**

Suitable Extinguishing Media

To contain the fire, use agents appropriate for the purpose. In the event of physical damage to a battery, use dry chemicals: Class D fire extinguishing powder, dry sand, carbon dioxide.

Inappropriate Extinguishing Media

Water.

5.2 Special hazards arising from the substance or mixture

Fire hazard

In the event of a fire involving this product, lead compounds and sulfuric acid fumes may be released. The battery may sustain physical damage due to pressure buildup if exposed to excessive heat, which may result in the release of corrosive materials.

Explosion hazard

Risk of explosion due to heating in a confined space. VRLA batteries emit hydrogen gas, which is highly flammable and forms explosive mixtures with air at concentrations ranging from approximately 4% to 76%. These mixtures can be ignited by a spark at any voltage, by open flames, or by other ignition sources. Batteries in use are part of an electrical circuit and must be disconnected from the power source before attempting to extinguish a fire. Turn off the power before disconnecting the batteries from the power source. Damaged batteries may expose gray-colored negative plates, which could catch fire if allowed to dry out. These plates may be doused with water after the battery has been disconnected from all electrical circuits.

Hazardous Combustion Products in the Event of a Fire

Thermal decomposition may lead to the release of irritating and toxic gases and vapors. Carbon oxides (CO, CO₂). Sulfur oxides. Lead fumes.

5.3 Recommendations for Firefighters

Precautionary measures in case of fire

Store away from combustible materials. Keep the container closed when not in use.

Firefighting Instructions

Exercise caution in the event of a chemical fire. Stay upwind. Avoid releasing water used to extinguish the fire into the environment. Eliminate all ignition sources if it is safe to do so. Dike and contain extinguishing fluids.

Protection During Firefighting

Do not enter the fire area without appropriate protective equipment, including self-contained breathing apparatus. Use a self-contained breathing apparatus and protective clothing.

Additional Information

Prevent extinguishing liquids from flowing into sewers or waterways. Decomposition products formed at high temperatures are harmful if inhaled.

SECTION 6: Accidental Release Measures**6.1 Personal Precautions, Protective Equipment, and Emergency Procedures**

General Guidelines

This information applies only if the VRLA battery has sustained damage and is faulty. Keep the public away from the hazardous area. Avoid sparks, open flames, or sources of ignition

For those not directly involved

Protective Equipment

Do not intervene without appropriate protective equipment. Wear protective clothing, suitable gloves, and eye/face protection. For more information, see Section 8, "Exposure Controls—Personal Protection."

Emergency Procedures

Ventilate the area. Evacuate non-essential personnel. Avoid contact with eyes, skin, or clothing. Do not inhale vapors. Do not touch or walk on the spilled product. Notify fire and environmental authorities.

For First Responders

Protective Equipment	Do not respond without appropriate protective equipment. Wear protective clothing, suitable gloves, and eye/face protection. For more information, see Section 8, "Exposure Controls—Personal Protection."
Emergency Procedures	Ventilate the area. Avoid contact with eyes, skin, or clothing. Do not inhale vapors.

6.2 Environmental Precautions

Prevent discharge into the sewer system and public waterways. Notify the appropriate authorities if large quantities of the product are discharged into the sewer system or public waterways. Avoid any contact with water.

6.3 Methods and Materials for Containment and Cleanup

Containment Methods	Contain any spills with dikes or absorbent materials to prevent dispersion or penetration into sewers or waterways. Do not touch or walk on the spilled product.
Cleanup Methods	Small spills: Collect all spilled material in a metal container lined with plastic. Absorb the spilled liquid with absorbent material or neutralize it with sodium bicarbonate. Large spills: Absorb the spilled liquid with absorbent material such as sand or soil. Collect mechanically (by sweeping or shoveling) and place in a suitable container for disposal. Dispose of safely in accordance with applicable local/national regulations.

6.4 Reference to Other Sections

Personal protective equipment: see Section 8. For disposal of residues, refer to Section 13: Disposal Information.

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

Precautions for Safe Handling	Avoid contact between the battery contents and your eyes, skin, or clothing. Do not pierce, crush, disassemble, or incinerate the battery. Do not short-circuit the terminals or expose the battery to excessive heat or open flames. Avoid inhaling fumes or vapors that may be released if the battery is damaged. Wear appropriate protective clothing, gloves, and eye or face protection when handling damaged or leaking batteries. Ensure good ventilation in the work area. Wash your hands, forearms, and face thoroughly after handling.
Hygiene Measures	Do not eat, drink, or smoke while using this product. Handle in accordance with good hygiene and safety practices. Wash hands and other areas of skin exposed to the substance with mild soap and water before eating, drinking, smoking, and when leaving the workplace.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

Technical measures:	Take precautions against electrostatic discharge. Ensure local exhaust ventilation or general room ventilation.
Storage conditions:	Keep under lock and key. Store in a dry, cool, and well-ventilated area. Incompatible
products and materials:	Strong acids. Strong alkalis. Strong oxidizing agents.
Heat and ignition sources:	Extremely high or extremely low temperatures.
	Avoid heat and direct sunlight. Keep away from sources of ignition.
Information on mixed storage:	Store away from food, feed, and beverages.
Storage location:	Store in a cool, well-ventilated area, away from incompatible products, whenever possible.

7.3 Specific End Uses

Batteries and accumulators.

SECTION 8: Exposure Controls/Personal Protection

8.1 Control Parameters

National occupational exposure limits and biological limit values

Sulfuric acid (mists) (7664-93-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local Name	Sulphuric acid (mist)
IOELV TWA (mg/m³)	0.05 mg/m³
Regulatory Reference	COMMISSION DIRECTIVE 2009/161/EU
Italy - Occupational Exposure Limit Values	
Local Name	Sulfuric acid (aerosol)
OEL TWA (mg/m³)	0.05 mg/m³
Regulatory Reference	Annex XXXVIII of Legislative Decree No. 81 of April 9, 2008, as amended (Legislative Decree No. 135 of September 4, 2024)
Lead (Pb) (7439-92-1)	
EU - Binding Occupational Exposure Limit (BOEL)	
Local Name	Lead and its inorganic compounds
BOEL TWA	0.03 mg/m³ (Inhalable fraction)
Notes	Non-threshold reprotoxic substance
Regulatory Reference	DIRECTIVE (EU) 2024/869 (amending Directive 2004/37/EC)
EU - Biological Limit Value (BLV)	
Local Name	Lead and its inorganic compounds
BLV	15 µg/100 ml Parameter: Pb - Medium: blood - Notations: BBLV. For workers whose blood lead level exceeds the biological limit value of 15 µg Pb/100 ml blood due to exposure that occurred before April 9, 2026, but is below 30 µg Pb/100 ml blood, medical surveillance is conducted on a regular basis. If a downward trend toward the limit value of 15 µg Pb/100 ml blood is established in these workers, they may be permitted to continue working in jobs involving exposure to lead. 30 µg/100 ml Until December 31, 2028 - Parameter: Pb - Medium: blood - Notations: BBLV. For workers whose blood lead level exceeds the biological limit value of 30 µg Pb/100 ml blood due to exposure that occurred before April 9, 2026, but is below 70 µg Pb/100 ml blood, medical surveillance is conducted on a regular basis. If a downward trend toward the limit value of 30 µg Pb/100 ml blood is observed in these workers, they may be permitted to continue working in jobs involving exposure to lead.
Note	Medical surveillance is conducted if exposure to a concentration of lead in the air exceeds 0.015 mg/m³, calculated as a time-weighted average over 40 hours per week, or if a blood lead level exceeding 9 µg Pb/100 ml blood is measured in individual workers. Medical surveillance is also conducted for female workers of childbearing age whose blood lead level exceeds 4.5 µg Pb/100 ml of blood or the national reference value for the general population not occupationally exposed to lead, if such a value exists.
Regulatory Reference	DIRECTIVE (EU) 2024/869 (amending Directive 2004/37/EC)
Tin (Sn) (7440-31-5)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local Name	Tin and inorganic tin compounds
IOELV TWA (mg/m³)	2 mg/m³ 2 mg/m³

Tin (Sn) (7440-31-5)	
Notes	SCOEL Recommendations (2003)
Regulatory Reference	COMMISSION DIRECTIVE 91/322/EEC COMMISSION DIRECTIVE 91/322/EEC
Glass fiber wool (65997-17-3)	
EU - Binding Occupational Exposure Limit (BOEL)	
Local name	Refractory ceramic fibers: Glass, oxide, chemicals
TLV – TWA ACGIH	1 f/cm ³
Regulatory Reference	ACGIH / DFG guideline values, Annex XXXVIII of Legislative Decree 81/08

8.2 Exposure Controls

Appropriate Technical Controls

No special exposure controls are required for the handling, storage, installation, or use of VRLA batteries.

Personal Protective Equipment

Not required under normal conditions of use. In case of battery damage: Wear recommended personal protective equipment; avoid unnecessary exposure.

Eye and Face Protection

Eye protection is required only if liquid may splash or spray. Chemical-resistant goggles or safety glasses. (EN 166)

Skin and Body Protection

Waterproof clothing. EN 13034. Large quantities: EN 14605. Corrosion-resistant clothing. Rubber apron, boots. Long-sleeved clothing is recommended. Wear chemically resistant protective gloves in accordance with EN 374-1. Ask the glove supplier for the exact breakthrough time that must be observed. Gloves must be removed and replaced if there are signs of wear or leakage.

Respiratory Protection

In case of insufficient ventilation, use a suitable respirator. Wear a mask equipped with a combined filter for acid gases/vapors and mists/aerosols (Type E-P3 or ABEK-P3 according to EN 14387).

Thermal hazards

Protection against thermal hazards:

Not required under normal conditions of use.

Environmental Exposure Controls

Environmental exposure controls:

Do not release into the environment. Avoid discharge into sewers or waterways.

Limiting and Controlling Consumer Exposure:

Avoid contact during pregnancy or while breastfeeding. Do not eat, drink, or smoke while using this product.

SECTION 9: Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical state:	Solid (single unit containing liquid/gel electrolyte impregnated in the separators).
Color:	Black / gray / red outer container
Appearance:	Batteries and rechargeable batteries.
Nominal voltage:	Varies depending on configuration
pH (electrolyte):	< 1 (strongly acidic).
Melting point of the casing:	> 130°C.
Solubility in water:	Electrolyte is completely soluble in water; plastic and lead are insoluble.

9.2 Additional Information

Other safety characteristics

	Plate grids and active materials:	Battery electrolyte:	Casing material:	Separator material:
Physical state:	Solid	Liquid	Solid	Fibrous material
Color:	Gray or brown	Colorless	Gray / Red / Black	White
Odor:	Odorless	Slight odor	Slight odor	Odorless
Melting point:	327°C	~ 35–60 °C	>100°C (DIN 53460)	Not applicable
Boiling point:	>600°C	~ 108–114 °C	Does not boil but degrades >270°C	>2500°C
Flammability:	Non-flammable	Non-flammable	Standard ABS: UL 94 HB, flame-retardant (FR) ABS UL 94 V-0.	Not classified for flammability; non-flammable
Lower and upper explosion limits:	Not applicable	Non-flammable	Not applicable	Not applicable
Flash point:	Non-flammable	Non-flammable	>330°C	Non-flammable
Autoignition temperature:	Non-flammable	Non-flammable	>460°C	Non-flammable
Decomposition temperature:	Not applicable	>700°C	>400°C	>800°C
pH:	Not applicable	<1	Not applicable	Not applicable
Kinematic viscosity:	Not applicable	~ 4.4 cP	Not applicable	Not applicable
Solubility:	Water: Insoluble	100% in water	Insoluble	Insoluble
Partition coefficient n-octanol / water:	Not applicable	Not relevant for inorganic substances	ABS behaves as a highly hydrophobic material, which suggests a high value	Not relevant for inorganic substances
Vapor pressure:	Not applicable	10–20 mmHg	Acrylonitrile butadiene styrene (ABS) is a thermoplastic polymer, not a liquid	Not detectable
Density and/or relative density:	11.35 g/cm³	Variable up to 1.350 g/cm³	1.07–1.4 g/cm³ (DIN 53479)	2.23 g/cm³
Relative vapor density:	Not applicable	3.4	Not applicable	Not applicable
Particle characteristics:	The substance is a solid in bulk form	If released into the atmosphere—which does not normally occur in battery applications—it forms aerosols or droplets, often ranging in size from submicrometers to 4 µm	The substance is a solid	The substance is a solid

SECTION 10: Stability and Reactivity**10.1 Reactivity**

Stable under recommended storage and use conditions (see Section 7). The product is not reactive under normal conditions of use, storage, and transport.

10.2 Chemical Stability

Stable under recommended storage and use conditions (see Section 7).

10.3 Possibility of Hazardous Reactions

Hydrogen gas is released during recharging. No hazardous polymerization occurs.

10.4 Conditions to Avoid

Overcharging. Keep away from all sources of ignition. Avoid excessive heat for prolonged periods. In the event of physical damage to a battery, avoid contact with organic materials and alkaline substances. Mechanical impacts.

10.5 Incompatible Materials

Strong alkalis. Strong acids. Strong oxidizing agents. Organic solvents that corrode the plastic casing.

10.6 Hazardous decomposition products

Carbon oxides (CO, CO₂). In the event of a fire involving the product, lead compounds and sulfuric acid fumes may be released.

SECTION 11: Toxicological Information**11.1 Information on hazard classes as defined in Regulation (EC) No. 1272/2008**

NOTE: This information applies only if the VRLA battery has been damaged and is defective

Acute toxicity (oral):	Harmful if swallowed. The electrolyte is highly corrosive.
Acute toxicity (dermal):	Causes severe skin burns
Acute toxicity (inhalation):	Harmful if inhaled. The electrolyte is highly corrosive. Eye
irritation / Serious eye damage:	Causes serious eye damage and blindness.
Reproductive toxicity:	Risk associated with continuous ingestion/inhalation of lead compounds (H360FD).

Valve-regulated lead-acid industrial battery (VRLA GEL AGM)

CLP (oral)	1,428.571 mg/kg body weight
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sulfuric acid (mist) (7664-93-9)

Inhalation LC50, rat (mg/L)	375 mg/m ³ air
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Lead (Pb) (7439-92-1)

LD50 (oral), rat	> 2000 mg/kg body weight
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LD50 dermal, rat	> 2000 mg/kg body weight
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Inhalation LC50, rat (mg/L)	> 5.05 mg/L (4 hours)
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Tin (Sn) (7440-31-5)

LD50 (oral), rat	> 2000 mg/kg body weight (OECD Method 423)
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LD50 dermal, rat	> 2000 mg/kg body weight (OECD Method 402)
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Inhalation LC50, rat (mg/L)	> 4.75 mg/L, 4 hours (OECD Method 403)
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Lead (Pb) (7439-92-1)	
IARC Group	2B - Possible human carcinogen
Reproductive toxicity	May impair fertility or harm the fetus.
Specific Target Organ Toxicity (STOT) — Single Exposure	Not classified
Specific Target Organ Toxicity (STOT) — Repeated Exposure	Causes damage to organs (blood, central nervous system, kidneys) following prolonged or repeated exposure (inhalation, oral).
Lead dioxide (1309-60-0)	
Specific Target Organ Toxicity (STOT) — Repeated Exposure	May cause organ damage upon prolonged or repeated exposure.

11.2 Information on Other Hazards

Endocrine-disrupting properties

Adverse health effects caused by endocrine-disrupting properties:

The mixture does not contain any substances included in the list established pursuant to Article 59(1) of the REACH Regulation as having endocrine-disrupting properties, or identified as having endocrine-disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or in Commission Regulation (EU) 2018/605, at a concentration of 0.1% by weight or higher.

Other Information

Possible adverse effects on humans and possible symptoms: Causes severe skin burns and serious eye damage.

SECTION 12: Ecological Information

12.1 Toxicity

Note: This information applies only if the VRLA battery has been damaged and is defective.

Ecology – Water:

The product may affect the acidity (pH) of water, which may have harmful effects on aquatic organisms.

Hazardous to the aquatic environment, short-term (acute):

Very toxic to aquatic organisms.

Hazardous to the aquatic environment, long-term (chronic):

Very toxic to aquatic organisms, with long-lasting effects.

Ecotoxicity:

The product contains sulfuric acid and lead compounds. Leakage of the electrolyte causes a sharp drop in the pH of waterways and is highly toxic to aquatic fauna and flora (H410).

Persistence and Degradability:

The inorganic components (lead and acid) are not biodegradable.

Bioaccumulation potential:

Lead is subject to bioaccumulation.

Additional information:

Sulfuric acid (electrolyte) (7664-93-9)	
LC50 for fish	16–28 mg/L – 96 hours (Lepomis macrochirus)
Chronic NOEC for fish	0.31 mg/L - 213 days (Salvelinus fontinalis)
Lead (Pb) (7439-92-1)	
LC50 for fish	107 µg/l, 96 hours (Oncorhynchus mykiss)
NOEC - Other aquatic organisms [1]	3.4 µg/L: 48 hours (Mytilus trossulus)

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Lead (Pb) (7439-92-1)	
Chronic NOEC for fish	29.3 µg/L – 30 days (Pimephales promelas)
Chronic NOEC for crustaceans	153.8 µg/L – 25 days (Alona rectangula)
Tin (Sn) (7440-31-5)	
LC50 for fish	> 12.4 µg/L, 96 hours (OECD Method 203) (Salmo gairdneri)
EC50 72h - Algae [1]	> 19.2 µg/L 72 hours (OECD Method 201) (Raphidocelis subcapitata)
Lead Dioxide (1309-60-0)	
EC50 Daphnia 1	2100 µg/l 96 hours (Daphnia magna)
Fiberglass wool (65997-17-3)	
LC50 for fish	> 1000 - 96 hours (Danio rerio), (OECD Method 203)
EC50 Daphnia 1	> 1000 mg/l - 72 hours (Daphnia magna, Mobility), (OECD Method 202)
EC50 algae	> 1000 mg/l - 72 hours (Pseudokirchneriella subcapitata), (OECD Method 201)

12.2 Persistence and Degradability

Valve-regulated lead-acid industrial battery (VRLA GEL AGM)	
Persistence and degradability	Not relevant for inorganic substances.
Sulfuric acid electrolyte (7664-93-9)	
Persistence and degradability	Not relevant for inorganic substances.
Lead (Pb) (7439-92-1)	
Persistence and degradability	Not relevant for inorganic substances.
Tin (Sn) (7440-31-5)	
Persistence and degradability	Not relevant for inorganic substances.
Lead Dioxide (1309-60-0)	
Persistence and degradability	Not relevant for inorganic substances.
Glass fiber wool (65997-17-3)	
Persistence and degradability	Not relevant for inorganic substances.

12.3 Bioaccumulation Potential

Sulfuric acid (electrolyte) (7664-93-9)	
Bioaccumulation potential	Not relevant for inorganic substances.
Lead (Pb) (7439-92-1)	
Bioaccumulation potential	Not relevant for inorganic substances.
Glass fiber wool (65997-17-3)	
Bioaccumulation potential	Not relevant for inorganic substances

12.4 Mobility in soil

No further information available

12.5 Results of the PBT and vPvB Assessment**Valve-regulated lead-acid industrial battery (VRLA GEL AGM)**

This substance/mixture does not meet the PBT criteria of the REACH Regulation, Annex XIII

This substance/mixture does not meet the vPvB criteria of the REACH Regulation, Annex XIII

12.6 Endocrine-disrupting properties

Adverse environmental effects caused by endocrine-disrupting properties

: The mixture does not contain any substances included in the list established in accordance with Article 59(1) of the REACH Regulation as having endocrine-disrupting properties, or substances identified as having endocrine-disrupting properties according to the criteria set forth in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration of 0.1% or higher.

SECTION 13: Disposal Considerations**13.1 Waste Treatment Methods**

Waste treatment methods:

Spent (used) VRLA batteries are subject to the requirements of Regulation (EU) 2023/1542 on batteries and battery waste. At the end of their useful life, spent (used) VRLA batteries must be collected and sent for recycling through an authorized and approved operator, in accordance with the provisions of the Regulation regarding waste management and extended producer responsibility. Do not dispose of them in the environment. Spent batteries are classified as hazardous waste and must be taken to authorized collection centers or national recycling consortia (e.g., Cobat / COBAT RIPA in Italy).

Recommendations for waste disposal:

The WEEE Directive 2012/19/EU (Waste Electrical and Electronic Equipment) applies: used VRLA batteries MUST be removed from electrical and electronic equipment at the end of their useful life.

Additional instructions:

Completely empty the packaging before disposal. Recycle as much of the product as possible. Comply with local regulations regarding disposal.

Environment – Waste:

Do not release into the environment.

EER (European Waste List) codes:

- 16 06 01: Lead batteries and accumulators.
- 16 06 06: Separately collected electrolyte from batteries and accumulators.

Hazard characteristics of the waste (HP):

HP 8 (Corrosive), HP 10 (Reproductive Toxicity), HP 14 (Ecotoxicity).

SECTION 14: Transportation Information

In accordance with: ADR / IMDG / IATA / ADN / RID

14.1 UN Number or ID Number

UN Number (ADR):	UN 2800
UN Number (IMDG):	UN 2800
UN Number (IATA):	UN 2800
UN Number (ADN):	UN 2800
UN Number (RID):	UN 2800

14.2 Official UN Transport Designation

Official shipping name:

SEALED BATTERIES FILLED WITH LIQUID ELECTROLYTE (Non-Spillable / Sealed Lead Acid Battery)

ZENITH Series VRLA (AGM/GEL) Sealed Valve-Regulated Lead-Acid Battery

14.3 Transport Hazard Classes

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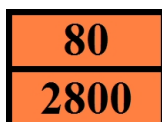
Packing Group (IMDG)	Not applicable
Packing Group (IATA)	Not applicable
Packing group (ADN)	Not applicable
Packing group (RID)	Not applicable

14.5 Environmental hazards

Hazardous to the environment	Yes
Marine pollutant	Yes
EmS No. (Fire)	F-A
EmS No. (Spill)	S-B
Additional Information	No further information available

14.6 Special Precautions for Users**Land Transport**

Orange sign



Tunnel restriction code (ADR)

E

Transport by sea

Special provisions (IMDG)	238
Limited Quantities (IMDG)	1 L
Exempt Quantities (IMDG)	E0
Packing Instructions (IMDG)	P003
Special Packing Provisions (IMDG)	PP16
Stowage Category (IMDG)	A

Air Transport

Exempt Quantities for Passenger and Cargo Air Transport (IATA)	E0
Limited quantities for passenger and cargo aircraft (IATA)	Prohibited
Max. net quantities of restricted items by air for passenger and cargo (IATA)	Prohibited
Packaging instructions for passenger and cargo air transport (IATA)	872
Max. net quantities for passenger and cargo aircraft (IATA)	No limit
Air Cargo Packaging Instructions (IATA)	872
Max. net quantity for cargo aircraft (IATA)	No limit
Special Provisions (IATA)	A48, A67, A183
ERG code (IATA)	8L

River transport

Classification Code (ADN)	C11
Special Provisions (ADN)	238, 295, 598
Limited Quantities (ADN)	1 L
Exempt quantities (ADN)	E0
Required equipment (ADN)	PP, EP
Number of cones/blue traffic lights (ADN)	0

Transport by rail

Classification code (RID)	C11
Special provisions (RID)	238, 295, 598
Limited Quantities (RID)	1 L
Exempt quantities (RID)	E0
Packaging instructions (RID)	P003, P801
Special packing provisions (RID)	PP16
Transport Category (RID)	3
Special Transport Provisions - Bulk (RID)	VC1, VC2, AP8
Express Packages (RID)	CE8
Hazard Identification Number (RID)	80

14.7 Transport by sea in bulk in accordance with IMO regulations

Not applicable

SECTION 15: Regulatory Information

15.1 Health, safety, and environmental laws and regulations specific to the substance or mixture

EU Regulations

Additional regulations, restrictions, and legal requirements: Regulation (EU) 2023/1542 on batteries and battery waste, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC.

Annex XVII of REACH (List of Restrictions)

List of EU Restrictions (Annex XVII of REACH)		
Reference Code	Applicable to	Title or description of the substance
3.	Sulfuric acid electrolyte	Liquid substances or mixtures that are classified as hazardous under Directive 1999/45/EC or that meet the criteria for any of the following hazard classes or categories listed in Annex I to Regulation (EC) No 1272/2008
3(b)	Sulfuric acid electrolyte	Substances or mixtures that meet the criteria for any of the following hazard classes or categories listed in Annex I to Regulation (EC) No. 1272/2008: Hazard Classes 3.1 through 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
30.	Lead (Pb)	Substances classified as toxic to reproduction, Category 1A or 1B, in Part 3 of Annex VI to Regulation (EC) No. 1272/2008 and listed in Appendix 5 or Appendix 6, respectively.
63.	Lead (Pb); lead oxide, lead dioxide lead	Lead and its compounds

REACH Annex XIV (Authorization List)

Does not contain any substances listed in Annex XIV of REACH (Authorization List)

REACH Candidate List (SVHC)

Contains substances listed on the REACH Candidate List in concentrations ≥ 0.1% or SCL: Lead (EC 231-100-4, CAS 7439-92-1); Contains one or more substances listed on the REACH Candidate List in concentrations < 0.1% or SCL.

PIC Regulation (Prior Informed Consent)

Contains one or more substances listed on the PIC List (EU Regulation 649/2012 on the export and import of hazardous chemicals): Lead (7439-92-1), lead dioxide (1309-60-0)

POP Regulation (Persistent Organic Pollutants)

Does not contain substances listed on the POP list (EU Regulation 2019/1021 on Persistent Organic Pollutants)

Ozone Regulation (2024/590)

Does not contain any substances listed on the ozone-depleting substances list (EU Regulation 2024/590 on substances that deplete the ozone layer)

Council Regulation (EC) on the Control of Dual-Use Items

The product does not contain any substances subject to Regulation (EU) 2021/821 of the European Parliament and of the Council of May 20, 2021, establishing a Union regime for the control of exports, brokering, technical assistance, transit, and transfer of dual-use items (recast).

Other specific legislative and regulatory provisions on health, safety, and the environment

- Regulation (EC) No. 1907/2006 (REACH): Articles 31, 32, 33 (Notification of SVHC substances—Lead, CAS 7439-92-1, present at > 0.1% w/w).
- Regulation (EC) No. 1272/2008 (CLP) and subsequent amendments.
- Legislative Decree 81/2008 (Consolidated Law on Occupational Safety): Title IX (Hazardous Agents).
- Legislative Decree No. 152/2006 (Consolidated Law on the Environment): Regulations on waste and the European Environmental Report (EER).
- ADR 2025 Agreement on the Transport of Dangerous Goods.

Regulation on Explosive Precursors (EU 2019/1148)

Contains one or more substances listed in the list of explosive precursors (EU Regulation 2019/1148 on the placing on the market and use of explosive precursors)

ANNEX I EXPLOSIVE PRECURSORS SUBJECT TO RESTRICTIONS

List of substances that may not be made available, introduced, possessed, or used by private individuals—either on their own or in mixtures, or in substances containing such substances—unless the concentrations are equal to or below the threshold values indicated in Column 2, and for which suspicious transactions, significant disappearances, and thefts must be reported within 24 hours.

Name	CAS Number	Threshold Value	Upper limit value for the purposes of licensing under Article 5, paragraph 3	Combined Nomenclature (CN) code for compounds of defined chemical composition presented in isolated form, as referred to in Note 1 of Chapter 28 or 29 of the CN	Combined Nomenclature code for mixtures containing no components that would result in classification under another CN code
Sulfuric acid	7664-93-9	15 % w/w	40 % w/w	ex 2807 00 00	ex 3824 99 96

Regulation on Drug Precursors (EC 273/2004)

Contains one or more substances listed in the list of drug precursors (Regulation (EC) No. 273/2004 on the manufacture and placing on the market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

Name	CN Code	CAS Number	CN Code	Category, Subcategory	Threshold	Annex
Sulfuric acid		7664-93-9	2807 00 00	Category 3		Annex I

15.2 Chemical Safety Assessment

No further information available

SECTION 16: Other Information

Abbreviations and Acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS Number	CAS Number (Chemical Abstracts Service)
STA	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological Limit Value
CLP	Regulation on Classification, Labeling, and Packaging; Regulation (EC) No. 1272/2008
DMEL	Derived Level with Minimal Effects
DNEL	Derived No-Effect Level
EC Number	EC Number (European Community)
EC50	Median effective concentration
ED	Endocrine Disruptor
EN	European Standard
IARC	International Agency for Research on Cancer

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Abbreviations and Acronyms:	
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods Code
LC50	Median Lethal Concentration in test subjects
VLIEP	Indicative Occupational Exposure Limit
LD50	Median lethal dose causing the death of 50% of test subjects
LOAEL	Lowest level at which an adverse effect is observed
NOAEC	Concentration at which no adverse effects are observed
NOAEL	Dose at which no adverse effects are observed
NOEC	Concentration at which no effects were observed
OECD	Organization for Economic Cooperation and Development
OEL	Occupational Exposure Limit
PBT	Persistent, Bioaccumulative, and Toxic Substance
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorization, and Restriction of Chemicals Regulation (EC) No. 1907/2006
RID	Regulations on the International Transport of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Wastewater Treatment Plant
WGK	Water Hazard Class
vPvB	Very Persistent and Very Bioaccumulative

Data sources:

Regulation (EU) 2023/1542 on batteries and battery waste.
Regulation (EC) No. 1272/2008 on the classification, labeling, and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No. 1907/2006.

Additional information:

Classification Procedure according to Regulation (EC) No. 1272/2008 [CLP]: Physical hazards: Based on experimental data. Health hazards: Calculation method. Environmental hazards: Calculation method.

Full text of H-statements and EUH statements:	
Acute Tox. 4 (by inhalation: vapor)	Acute Toxicity (by inhalation: vapor) Category 4
Acute Tox. 4 (oral)	Acute Toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment – Acute hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – Chronic hazard, Category 1
Carc. 1B	Carcinogenicity, Category 1B
Carc. 2	Carcinogenicity, Category 2
Eye Damage 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Lactation	Reproductive toxicity, supplementary category — Effects on or via lactation
Rep. 1A	Reproductive toxicity, Category 1A
Rep. 2	Reproductive toxicity, Category 2

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Full text of the H and EUH hazard statements:	
Skin Corrosion 1	Skin corrosion/irritation, Category 1
Skin Corr. 1A	Skin corrosion/irritation, Category 1, Subcategory 1A
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 1	Specific Target Organ Toxicity – Repeated Exposure, Category 1
STOT RE 2	Specific target organ toxicity – repeated exposure, Category 2
H302	Harmful if swallowed.
H314	Causes severe skin burns and serious eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H350	May cause cancer.
H351	Suspected of causing cancer.
H360	May impair fertility or harm the fetus.
H360D	May harm the fetus.
H360FD	May impair fertility. May harm the fetus.
H361f	Suspected of impairing fertility.
H362	May be harmful to breastfed infants.
H372	Causes organ damage in case of prolonged or repeated exposure.
H373	May cause organ damage in case of prolonged or repeated exposure.
H400	Very toxic to aquatic organisms.
H410	Very toxic to aquatic organisms, with long-lasting effects.

To ensure the safe use of all Zenith AGM GEL VRLA sealed batteries, the following precautions must be observed:

- NEVER PLACE BATTERIES INSIDE SEALED OR GAS-TIGHT ENCLOSURES DURING OPERATION, TRANSPORT, OR STORAGE
- Do not recharge the batteries at temperatures above +50 °C, nor discharge or store them at temperatures above +60 °C.
- Risk of fire, explosion, or burns: Do not disassemble, heat to temperatures above 50°C, or incinerate.
- Never short-circuit the battery terminals, as the resulting sparks and arcs can injure personnel and pose a risk of fire and explosion.
- Batteries must always be charged using a voltage-regulated charging system with adequate ventilation to prevent the buildup of flammable gases and to ensure proper heat dissipation.
- In extreme cases of charging equipment malfunction and/or battery failure, high voltage and high temperatures may occur, leading to the formation of hydrogen sulfide (H₂S), a toxic gas. If you detect the smell of rotten eggs (even at extremely low concentrations), turn off the charging equipment, evacuate all personnel from the area, and ventilate thoroughly. Before attempting to resume charging, seek guidance.
- Batteries emit hydrogen gas, which is highly flammable and capable of forming explosive mixtures in air ranging from approximately 4% to 76%. This can be ignited by a spark at any voltage, by open flames, or by other ignition sources

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ZENITH Series VRLA (AGM/GEL) Sealed Valve-Regulated Lead-Acid Battery

Disclaimer

The information contained in this Safety Data Sheet (SDS) is based on our current knowledge as of the date indicated above. This information is provided solely for the purpose of enabling the safe handling, use, storage, transport, and disposal of the product and should not be construed as a warranty or a specification of the product's quality. The information applies only to the specific material designated and may not be valid for that material when used in combination with other materials or in other processes not specifically mentioned in this sheet. The user is responsible for verifying the suitability and completeness of the information in relation to the specific use of the product.

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