

	SAFETY DATA SHEET - Pb (VRLA) - AGM BATTERIES SAFETY DATA SHEET According to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878		Date of Issue date:	05/02/2025
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SECTION 1: PRODUCT AND MANUFACTURER/SUPPLIER IDENTIFICATION

1.1	Product Identifier:	Valve Regulated Lead Acid Industrial Battery (VRLA)
	Classification:	Non-spillable lead-acid battery Valve Regulated Lead Acid Battery (VRLA) Absorbed Electrolyte Battery (AGM)
	Product codes:	KB, KBL, KBHR, KBC, KBAS, KBASL, KBEV, KB(2v), KBF, KBS, KBPL, KBPLF
1.2	Relevant identified uses of the product and uses advised against	<u>Relevant identified uses:</u> Stationary: Telecommunications; UPS; alarm and security systems; emergency lighting; utility switching Cyclic: Golf carts, portable tools, portable lighting, wheelchairs, remote telemetry Energy storage: Photovoltaic energy systems (PVES); wind turbines
		<u>Uses not recommended:</u> Automotive, commercial and agricultural SLI applications. <u>Reason for discouraged uses:</u> High starting and ignition current demands exceed the design of internal and external current-carrying components
1.3	Safety data sheet supplier data	Supplier: Tempel, S.A. Address: C/ Cobalto Nº4, 0890 – Hospitalet de Llobregat Barcelona, España Phone: +34 93 600 36 00 Email: info@tempelgroup.com Language: Spanish
1.4	Emergency telephone:	Spain: National Institute of Toxicology and Forensic Sciences Phone: 933 174 061 Email: info@tempelgroup.com , intcf@justicia.es Availability: 24 hours
		United States: CHEMTREC 1-800-262-8200 (In the United States) Phone: 1-800-424-9300 (In the United States) +1 703-741-5500 (In the rest of the world) Email: chemtrec@chemtrec.com , intcf@justicia.es Availability: 24 hours

SECTION 2: HAZARDS IDENTIFICATION - In case the internal components of the battery are exposed

2.1	Classification of the substance or mixture		
According to Regulation (EC) No. 1272/2008 (CLP) Full text of H-phrases - see section 16	H302	Acute Toxicity 4	
	H314	Skin Corr.1A	
	H315	Skin lesions/irritation 1	
	H318	Eye damage/irritation 1	
	H360D	Reproductive toxicity 1A,1B	
	H360Fd	Repr.1A	
	H362	May be harmful to breastfed infants.	
	H372	STOT RE1	
	H400	Very toxic to aquatic life	
	H410	Very toxic to aquatic life with long lasting effects	
Adverse physicochemical, health and environmental effects. No additional information available.			
2.2	Label elements		
Labeling according to Regulation (EC) No. 1272/2008 (CLP)			
Hazard pictograms (CLP)			
			
GHS05	GHS07	GHS08	GHS09

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Signaling word (CLP) - DANGER

Signaling word (CLP) - DANGER	H302	Harmful if swallowed.
	H314	Acid causes severe skin burns and eye damage.
	H315	Causes skin irritation.
	H318	Serious eye damage.
	H360D	Suspected of damaging the unborn child.
	H360Fd	May harm fertility or the unborn child if swallowed or inhaled.
	H362	May harm breastfed infants.
	H372	Causes damage to organs through prolonged or repeated exposure.
	H400	Very toxic to aquatic life
	H410	Very toxic to aquatic organisms with long lasting effects.

Cautionary statements (CLP)	P201	Obtain special instructions before use
	P202	Do not handle until all safety precautions have been read and understood.
	P260	Do not breathe dust/smoke/fume/gas/mist/fumes/spray.
	P264	Wash thoroughly after handling
	P270	Do not eat, drink or smoke while using this product.
	P273	Avoid release to the environment
	P280	Wear protective gloves/protective clothing/eye protection.
	P303, 361, 353	Contact on clothing or skin (or hair): Immediately remove/remove all contaminated clothing and wash before reuse. Wash skin with water/shower.
	P301, 330, 331	If swallowed or consumed: Rinse mouth NOT induce vomiting. Call a physician/poison control center if you feel unwell.
	P304, 340	If inhaled: Move person to fresh air and keep comfortable for breathing.
	P305, 351, 338	In case of eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if applicable and easy to do. Continue rinsing.

2.3	Other hazards		
VRLA battery	Specifications	VRLA batteries can be heavy. Proper manual handling techniques and/or mechanical means of lifting (e.g. forklifts) should be used.	
	Equipment	VRLA batteries can contain large amounts of electrical energy that can cause very high discharge currents and severe electric shock if the terminals are short-circuited.	
	Chemistry	- The VRLA battery presents no chemical hazards during normal operation as long as the recommendations for handling, storage, transport and use are observed. - VRLA batteries emit hydrogen gas, which is highly flammable and will form explosive mixtures in air from approx. 4% to 76%. It can be ignited by a spark of any voltage, naked flames or other ignition sources. - If the battery is broken and internal components exposed, hazards may exist which require careful attention.	

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1	Substances present in the product					
	Components	Classification according to Regulation (EC) No. 1272/2008 (elp) 1272/2008 (ELP)	Substances	Approximate % (weight/weight) Battery	Chemistry Symbol	N° CAS
	Grid		Inorganic lead	from 40 to 75	Pb	7439-92-1
			Calcium	< 0.1	Ca	7440-70-2
			Tin	< 1	Sn	7440-31-5
	Active Materials	H360 H372 H400 H410	Lead monoxide	< 1	PbO	1317-36-8
			Lead dioxide (lead oxide IV)	15 ~ 25	PbO ₂	1309-60-0
	Battery Electrolyte	H314	Dilute sulfuric acid	10 ~ 20	H ₂ SO ₄	7664-93-9



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Casing Material		Standard grade, UL94: HB • ABS (acrylonitrile-butadiene-styrene copolymer)	from 5 to 10		9003-56-9
		Flame Retardant (FR) Grade, UL94:V0 • ABS (acrylonitrile-butadiene-styrene copolymer) • Brominated aromatic compound. • Antimony trioxide	from 5 to 10 <1,2% <0,3%		9003-56-9
Separator Material		Absorbent glass mat separator (AGM) (100% borosilicate glass microfiber)	~ 5		65997-17-3
Inorganic lead and battery electrolyte (dilute sulfuric acid) are the main components of VRLA batteries. Other substances may be present, but in small quantities depending on the type of battery. Please contact Tempel S.A. for more information.					

SECTION 4: FIRST AID MEASURES IN CASE OF ACUTE EXPOSURE

This information is only relevant if the VRLA Battery has been damaged, is broken and people have direct contact with the internal components.

4.1	Description of first aid		
	Components		Action
Plate grid and active material	Inhalation		Electrolyte: Move person immediately to fresh air. Give oxygen if breathing is difficult. Lead compounds: Remove person from area of exposure, have person gargle, wash nose and lips, consult physician.
	Ingestion		Electrolyte: Have person drink large quantities of water, do not induce vomiting, consult physician. Lead compounds: Consult physician immediately.
	Skin contact		Electrolyte: Rinse under running water for at least 15 minutes, completely remove contaminated clothing, including shoes. Lead compounds: Wash immediately with soap and water.
	Eye contact		Electrolyte and lead compounds: Immediately flush with plenty of water for at least 15 minutes, consult physician immediately.
	Self-protection for the rescuer		Eye protection (safety glasses or face shield) and resistant gloves are required. In case of inhalation, a face or respiratory mask may be necessary.
Battery electrolyte			PROMPT ATTENTION IS ESSENTIAL - SEEK IMMEDIATE MEDICAL ATTENTION.
	Inhalation		Remove the person from exposure to fresh air. If the person continues to feel unwell, seek medical attention.
Battery electrolyte	Ingestion		Rinse mouth with water and give plenty of water to drink. Do not induce vomiting. If the person continues to feel unwell, seek medical advice.
	Skin contact		Drench with large quantities of water. Remove contaminated clothing and soak in water to dilute the acid. Continue to wash the affected area for at least 10 minutes. Seek medical advice
	Eye contact		PROMPT ATTENTION IS ESSENTIAL - SEEK IMMEDIATE MEDICAL ATTENTION. Immediately irrigate with eyewash solution or clean water for at least 10 minutes, holding eyelids apart. Then take the person to hospital without further delay.
	Self-protection		Eye protection (safety glasses or face shield) and resistant gloves are required. In case of inhalation, a face or respiratory mask may be necessary.
	Inhalation		Material may burn in a fire with toxic smoke and decomposition products. In case of inhalation of decomposition products, keep patient calm, remove to fresh air and consult a physician. If a large quantity is inhaled, take the person to hospital. Note to physician: Treat according to symptoms (decontamination, vital functions), no specific antidote is known.
Housing material	Ingestion		Rinse mouth with water and give plenty of water to drink. Do not induce vomiting. If the person continues to feel unwell, seek medical advice.
	Skin contact		Areas affected by molten material should be quickly placed under cold running water and a sterile protective dressing applied. Seek medical advice.
	Eye contact		May cause irritation or injury due to mechanical action and traces of battery electrolyte. Irrigate immediately with eyewash solution or clean water for at least 10 minutes, holding eyelids apart. Then take the person to hospital without further delay.
	Self-protection		Eye protection (safety glasses or face shield) and disposable gloves are required. In case of inhalation, a face or respiratory mask may be necessary.
Separator material	for the rescuer		Remove patient from exposure to fresh air. If irritation persists, consult a physician.
	Inhalation		Rinse mouth with water and give plenty of water to drink. Do not induce vomiting. If the person continues to feel unwell, seek medical advice.
Separator material	Ingestion		In case of skin contact, wash immediately with plenty of soap and water. If irritation persists, consult a physician.

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		Skin contact	May cause irritation or injury due to mechanical action and traces of battery electrolyte. Irrigate immediately with eyewash solution or clean water for at least 10 minutes, holding eyelids apart. Then take the person to hospital without further delay.
		Eye contact	Eye protection (safety glasses or face shield) and disposable gloves are required. In case of inhalation, a face or respiratory mask may be necessary.

SECTION 5: MEASURES AGAINST FIRE AND EXPLOSION HAZARDS

5.1	VRLA battery	General Information: Explosion Hazard 	- VRLA batteries emit hydrogen gas which is highly flammable and will form explosive mixtures in air of approx. 4% to 76%. It can be ignited by a spark of any voltage, naked flames or other ignition sources. - Batteries in use will form part of an electrical circuit and should be isolated from the power supply before attempting to extinguish a fire. Disconnect power before disconnecting batteries from the power source. - Damaged batteries may expose gray, negative plates, which may ignite if allowed to dry. These plates can be wetted with water after removing the battery from all electrical circuits.
5.2		Types of suitable extinguishers	CO2 Dry powder is recommended for electrical fires.
		Unsuitable types of	Water extinguishers should never be used to extinguish an electrical fire.
5.3		Unsuitable extinguishers	Carbon monoxide, sulfur dioxide, sulfur trioxide, lead fumes and vapors, toxic fumes from decomposition of battery case materials.
5.4		Hazardous combustion and decomposition products	Face shield or safety glasses; Self-contained breathing apparatus or equipment (SCBA); Full acid-resistant protective clothing should be worn when fighting fires.

SECTION 6: MEASURES IN CASE OF ACCIDENTAL RELEASE

This information is only relevant if the VRLA Battery has been damaged and is broken.

6.1	Components		
	VRLA battery		VRLA batteries are designed to be safe to handle and not leak electrolyte under normal conditions. In case of accidental damage, it is necessary to use heavy gloves to pick up the battery to avoid invisible electrolyte leakage.
	Grid plate and active material:	Personal precautions	Eye protection (safety glasses or face shield) and heavy-duty gloves are required. If material is wet, no respirator or face mask is required If material is dry, a respirator or mask is required.
		Methods for cleaning up	Large, solid pieces can be collected and bagged for recycling. Never use a brush to sweep up residues, as this may generate lead dust in the air. Damp wipe the spill area to remove all traces of debris. Battery waste and clean-up materials should be collected and placed in a sealed inert container (e.g., self-sealable plastic bag or bucket). self-sealing plastic bag or bucket) for disposal, see section 13.
		Environmental precautions	Do not allow material to enter a watercourse. Exposed lead materials should be placed in an inert sealed container (e.g., self-sealing plastic bag or bucket) for disposal, see Section 13. example, a self-sealing plastic bag or bucket) for disposal, see Section 13.
	Electrolito de batería:	Personal precautions	Be sure to wear appropriate acid-resistant personal protective clothing (including heavy-duty gloves, safety glasses and respiratory protection) during spill removal and cleanup.
		Methods for cleaning up Small spills	Neutralize and absorb the spill using soda ash, sodium bicarbonate (available in supermarkets), sodium carbonate or calcium carbonate powder. Wet clean the spill area to remove all traces of debris. Battery waste and cleaning materials should be collected and placed in a sealed inert container (e.g., self-sealing plastic bag or bucket) for disposal, see Section 13.

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		Large spills	Large amounts of electrolyte spillage are unlikely to occur with VRLA batteries, as the electrolyte is completely absorbed into the active materials and separator. Cover the spill area with dry sand, earth, sawdust or other inert material. Neutralize the electrolyte with soda ash, sodium bicarbonate (available in supermarkets), sodium carbonate or calcium carbonate powder. Wet wipe the spill area to remove all traces of residue and electrolyte. Cleaning materials should be collected and placed in a sealed inert container (e.g., self-seal plastic bag or bucket) for disposal, see Section 13.
		Environmental precautions	Battery electrolyte should not be allowed to enter any drain or sewage system or watercourse.
	Material de la carcasa:	Clean-up methods	Assume that the battery casing material is contaminated and proceed as for the grids and active materials.
	Material del separador:	Clean-up methods	Assume that the battery casing material is contaminated and proceed as for the grids and active materials.

Note: If applicable, see items 8 and 13.

SECTION 7: HANDLING AND STORAGE

SECTION 7: HANDLING AND STORAGE			
	Component:		
7.1	VRLA battery	Precautions for safe handling:	Be sure to wear appropriate acid-resistant personal protective clothing (including heavy-duty gloves, safety glasses and respiratory protection) during spill removal and cleanup.
			<u>Mechanical lifting devices:</u> (e.g. forklifts and pallet trucks) to move battery pallets. Approximate weight 1 ton
			<u>Mechanical handling assistants:</u> (e.g., trucks and forklifts) will be required to handle individual batteries weighing more than 25 kg.
			<u>General safety considerations:</u> Do not drop batteries: dents and deformations in the casing may indicate internal damage to the battery. Cracks will leak electrolyte. Do not place VRLA batteries cap to cap in such a way as to short-circuit the terminals.
7.2		Conditions for safe storage, including possible incompatibilities:	Store VRLA Batteries in a cool, well-ventilated place with a solid, impervious surface and adequate containment in case of accidental acid spills. solid, impermeable surface, and adequate containment in case of accidental acid spill.
			Store it indoors and protect it from direct sunlight and adverse weather conditions, such as rain, wind, rain, rain, snow, snow, ice, snow, ice, ice adverse weather conditions, such as rain, snow and other water sources.
			Storage of large quantities of VRLA batteries may require approval from the local environmental protection agency and/or local water authorities. local water authorities.
			VRLA battery pallets are heavy. Store at ground level or on lower levels of storage systems (e.g., shelving).
			Take special care in dry conditions to avoid risk of electrostatic discharge.
			Protect against physical damage and exposure to organic solvents and other incompatible materials.
			Do not store VRLA batteries near heat sources, naked flames and sparks.
			Whenever possible, store batteries in their original packaging. When removing the batteries from their original packaging (e.g. for transporting small quantities), make sure that the new packaging protects the batteries from damage and the risk of short-circuiting the terminals.
End-of-life (EC WEEE Regulation)		Ensure that batteries are removed from equipment at the end of their useful life and collected for recycling by an authorized contractor.	
7.3	Specific end uses: Installation:	1. Refer to EN IEC 62485-1, Safety requirements for secondary batteries and battery installations. General safety information 2. Refer to EN IEC 62485-2, Safety requirements for secondary batteries and battery installations. Stationary batteries	



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SECTION 8: EXPOSURE CONTROL / PERSONAL PROTECTION

Components		
8.1	VRLA battery	Control parameters:
8.2		Exposure control:
8.3		Personal protection:
		UL Warning

There are no special control parameters for handling, storage and installation of VRLA batteries.
VRLA Batteries emit hydrogen gas which is highly flammable and will form explosive mixtures in air of approximately 4% to 76%. Never install VRLA Batteries in a gas tight enclosure during storage, transport or use.
There are no special exposure controls for handling, storage, installation or use of VRLA Batteries.
• Respiratory system protection (NIOSH/MSHA approved equipment): None required under normal conditions. When concentrations of atomized sulfuric acid are found to exceed the permissible exposure limit (PEL), a NIOSH or MSHA approved respiratory protection system should be worn. • Skin protection: Acid-resistant rubber or plastic gloves, with sleeves up to elbows. Acid resistant apron. Under emergency or severe exposure conditions, wear acid resistant clothing, gloves and boots. • Eye protection: Chemical-proof goggles or face shield.
When there are no signs of damage or visible traces of liquid (electrolyte) or solid deposits on the batteries, the batteries can be handled safely without additional personal protective equipment. Be sure to use electrically insulating equipment when installing batteries (e.g., insulating mats and covers; insulating tools). Remove ALL metal objects from the person when working with VRLA Batteries: e.g. jewelry (rings, watches, bracelets, necklaces), pens, flashlights, etc. Where there is evidence of damage or liquid (electrolyte) or solid deposits, rubber gloves and acid-resistant clothing should be worn when handling affected batteries and packaging to protect against the effects of any electrolyte that may be present. If free electrolyte is suspected, safety glasses should be worn, and if large quantities are present, chemical goggles or face shield should be worn.
“Warning: Risk of fire, explosion or burns. Do not disassemble, heat above 50°C or incinerate”.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Components		
9.1	VRLA battery	• The main components are listed in SECTION 2. • The undamaged product is an item manufactured in an inert plastic (ABS) casing, which will burn if subjected to high temperatures or ignition sources. Some types of batteries are manufactured with flame retardant ABS casings on which will be indicated by a suffix "FR" after the battery type, refer to the technical specifications.

The information below refers to the physical and chemical properties of the main components and substances of VRLA batteries. This information is published for reference only.

		Appearance		Safety data	
		Form	Solid	Solidification point	± 327°C
Plate grid and active material		Color	Gray or brown	Boiling point	± 1740°C
		Odor	Odorless	Solubility in water	Very low (0.15 mg/L)
				Solubility in acid or alkaline solutions	Yes, depending on solution strength.
				Density (at 20°C)	11.35 g/cm ³
				Vapor pressure (at 20°C)	Undetectable
Battery electrolyte		Aspect		Safety data	
		Form	Liquid	Solidification point	-35 a -60°C
		Color	Odorless	Boiling point	108 a 114°C
		Odor	Odorless	Solubility in water	Complete
				Density (at 20°C)	Variable up to 1.35 g/cm ³
				Vapor pressure (at 20°C)	10 – 20mmHg
Material de la caja		Aspect		Safety data	
		Form	Solid	Softening point	>100°C
		Color	Gray or brown	Flash point	>330°C
		Odor	Slight odor	Solubility in water	Insoluble
				Solubility in other solvents	Soluble in polar solvents, aromatic solvents and chlorinated hydrocarbons
				Density (at 20°C)	1.07 – 1.4 g/cm ³ (DIN 53479)
Material del separador				Vapor pressure (at 20°C)	Indetectable
		Aspect		Safety data	
		Form	Fibrous material	Solidification point	820°C



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		Color	White	Boiling point	>2500°C
		Odorless	Odorless	Solubility in water	Insoluble
				Density (at 20°C)	2.23g/cm ³
				Vapor pressure (at 20°C)	Undetectable

SECTION 10: STABILITY AND REACTIVITY

	Components		
10.1	VRLA battery	Stability	Within the operating temperature range of -20 to +50 °C, the undamaged product is stable.
10.2	Plate grid and active material	Materials and conditions to avoid	Powdered lead reacts violently with molten ammonium nitrate and sodium acetylide. It reacts violently in contact with chlorine trifluoride.
10.3	Battery electrolyte	Possibility of hazardous reactions	- Dilution of more concentrated grades with water may release excessive heat. - Highly reactive with metals and organic materials. - In contact with metals, may generate hydrogen which forms explosive mixtures with air. - Destroys organic materials such as cardboard, wood, textiles, etc. - Vigorous reaction with sodium hydroxide and alkalis..
		Hazardous decomposition product(s)	Sulfur oxides
10.4	Housing material	Materials and conditions to avoid	- To avoid thermal decomposition, do not overheat. - Begins to decompose at temperatures >275°C. - Strong oxidizing agents.
		Hazardous decomposition products	Monomers, other degradation products, traces of hydrogen cyanide.
10.5	Separator material	Stability	Stable material.
		Materials and conditions to avoid	Incompatible with hydrofluoric acid and concentrated sodium hydroxide.
		Hazardous decomposition products	Hazardous polymerization is not expected.

SECTION 11: TOXICOLOGICAL INFORMATION

This information is only relevant if the VRLA Battery has been damaged and is broken.

	Components		
11.1	VRLA battery		- This information does not apply to the undamaged VRLA battery. It is relevant if the battery is ruptured and components are released into the environment. - Exposure limits may vary depending on national legislation and regulations.
11.2	Plate grids: Lead metal, Lead alloys.	Acute Toxicity 	- Toxic by ingestion or inhalation. - Chronic poison. - Lead is a poison that affects virtually every system of the body. - Symptoms include fatigue, headaches, constipation, bone and muscle pain, gastrointestinal disorders and loss of appetite. - Blood lead levels at or above 80 µg/dl have been associated with acute and chronic effects of lead poisoning.
11.3	Material activo: Dióxido de plomo.	Acute Toxicity 	- Toxic by ingestion or inhalation. - Chronic poison. - Chronic exposure to lead compounds can lead to an accumulation of lead in the body, resulting in various health problems, such as anemia, kidney and liver damage, vision problems, memory loss and CNS damage.
11.4	Active material: Lead dioxide.	Corrosive 	- Corrosive, more concentrated solutions may cause severe burns to mouth, eyes and skin. - Harmful by ingestion and skin contact.
		Inhalation 	Mist is a severe respiratory tract irritant. Fluid accumulation in the lung (pulmonary edema) can occur up to 48 hours after exposure and could be fatal.



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		Ingestion 	Will immediately cause severe corrosion and damage to the gastrointestinal tract.
		Skin contact 	Causes severe chemical burns.
		Visual contact 	Risk of serious eye injury. Causes severe burns. May cause prolonged or permanent damage or even total loss of eyesight. Mist will cause irritation.
11.5	Case material:		According to the information available, the product is not harmful to health provided it is handled and processed correctly in accordance with the recommendations given.
11.6	Separator Material:		- Based on epidemiological and animal implantation studies, glass microfibers are believed to have limited carcinogenic potential and, as such, are designated as Group 2B materials (IARC, USA). - potential and, as such, are designated as Group 2B materials (IARC, USA). The material should be treated as a category 3 carcinogen (Europe). - Limited evidence of carcinogenic effects.

SECTION 12: ECOLOGICAL INFORMATION

This information is only relevant if the VRLA Battery has been damaged and is broken.

	Components		
12.1	VRLA battery		This information does not apply to the undamaged VRLA battery. It is relevant if the battery is ruptured and the components are released into the environment.
12.2	Plate grids and active material	Metallic lead, lead alloys and lead dioxide 	Chemical and physical treatment is necessary to remove lead from water. Wastewater containing lead should not be disposed of untreated.
		Ecotoxicity 	Metallic lead in bulk form is not classified as hazardous to the aquatic environment due to its low solubility and rapid elimination from the water column. Inorganic lead compounds are considered to be acutely toxic to the environment and also present a long-term hazard to aquatic organisms.
		Effect on the aquatic environment 	- Toxicity to fish: LC50 96h > 100mg/L - Toxicity to daphnia: EC50 48h > 100mg/L - Toxicity to algae: IC50 72h > 10mg/L
12.3	Battery electrolyte	Ecotoxicity 	- To avoid damage to the sewage system, the acid should be neutralized with soda ash, sodium bicarbonate or sodium carbonate prior to disposal. - The pH change can cause ecological damage. The electrolyte solution reacts with water and organic substances, causing damage to flora and fauna. - The electrolyte may also contain lead components that can be toxic to aquatic environments.
		Persistence and degradation	It remains indefinitely in the environment as sulfate.
12.4	Housing material	Disposal information	No data available: insoluble in water
		Environmental fate and behavior	Due to the consistency of the product and its insolubility in water, it will apparently not be bioavailable.
12.5	Separator material		- No data available: insoluble in water - Not believed to pose any risk to the environment.

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SECTION 13: DISPOSAL CONSIDERATIONS

	Componets		
13.1	VRLA battery	Europe	- Spent (used) VRLA batteries are subject to the requirements of Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators. Spent (used) VRLA batteries MUST be sent for recycling through an authorized contractor at the end of their useful life. - Directive 2002/96/EC on waste electrical and electronic equipment (WEEE) applies. Spent (used) VRLA batteries MUST be removed from electrical and electronic equipment at the end of their useful life.
		Around the world	- VRLA batteries contain inorganic lead compounds and sulfuric acid which are harmful to the environment. - Spent (used) batteries should be disposed of in an environmentally sound manner in accordance with local national laws and regulations. - VRLA batteries should not be disassembled, burned or incinerated as a means of disposal. - At the end of their useful life, VRLA batteries may still be electrically "live" and contain a large amount of electrical energy. The same care and attention should be given to safe handling as when handling new batteries. Special care should be taken to avoid shorting the battery terminals.
13.2	Plate grid and active material	Europe and worldwide	- Metallic lead and active materials (lead oxides) must be recycled. - Disposal must be in accordance with the European Hazardous Waste Directive 2008/98/EC.
13.3	Battery electrolyte	Europe	Disposal must be carried out in accordance with the European Directive on Hazardous Waste 2008/98/EC on the protection of the environment through criminal law.
		Around the world	Disposal should be in accordance with local, state or national legislation.
		General	The electrolyte of the batteries is dilute sulfuric acid, whose concentration depends on the state of charge of the batteries. It must be neutralized before disposal. See SECTION 6 for cleaning and disposal advice.
13.4	Enclosure material		- Do not dispose of this product in the sewage system or in any ocean or watercourse to avoid ingestion by marine animals and birds. - Recycling is encouraged. - Disposal by controlled incineration or landfill at source may be acceptable in accordance with local national laws and regulations.

SECTION 14: TRANSPORT INFORMATION

	Componets		
14.1	VRLA battery	U.S. DOT	- Our non-spillable lead-acid batteries fall under the U.S. Department of Transportation (DOT) hazardous materials regulations but are excluded from those regulations provided they meet the requirements of 49 CFR 173.159(f) and 49 CFR 173.159a. - Batteries that are subject to the regulation provided they are in compliance with the tests for vibration and differential pressures in 49 CFR 173.159(f) and the "burst test" compiled in 49 CFR 173.159a. - When offered for transport, batteries must be protected against short circuits and securely packaged in accordance with 49 CFR 173.159a. - Batteries and outer packaging must be marked "NON-SPILLABLE" or "NON-SPILLABLE BATTERY" as indicated in 49 CFR 173.159a.
		Inland transport (ADR)  	<u>Land transport (ADR / RID):</u> New and used batteries are exempt from all ADR / RID.



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		Transporte marítimo (IMDG) 	<u>Maritime transport (IMDG Code)</u> Non-spillable batteries are exempt from the dangerous goods shipping regulations because the batteries meet the requirements of Special Provision 238 of the International Maritime Dangerous Goods Code (IMDG code). Battery terminals must be protected against short circuits. • Special provisions: 238 • Limited quantities: 1L • Excepted quantities: E0 • Packaging instructions: P003 • Special packing provisions: PP16 • EmS-N° (fire): F-A • EmS-N° (spill): S-B • Stowage category: A • Properties and remarks: Metal plates immersed in gelled acid or alkaline electrolyte in a spill-proof glass, hard rubber or plastic container. When electrically charged, may cause fire by short-circuiting terminals. Causes burns to skin, eyes and mucous membranes.
		Transporte aéreo (IATA) 	<u>Air transport (IATA-DGR)</u> Non-spillable batteries are exempt from goods regulations because they comply with the requirements of the International Air Transport Association (IATA version 65) Packing Instructions 872 and Special Provisions A67 and the International Civil Aviation Organization (ICAO) technical instructions. Battery terminals must be protected against short circuits.

SECTION 15: REGULATORY INFORMATION

Componets		Obligatory marking	
15.1	VRLA battery		Crossed-out wheeled garbage can marked "SEPARATE COLLECTION" for all batteries and accumulators. Not to be disposed of with household, commercial or industrial waste. Ref.: Battery Directive 2006/66/EC
		Pb	The Pb symbol indicates the heavy metal content of the battery and enables the lead-acid battery to be sorted for recycling. Ref: Directive 2006/66/EC on batteries.
			The International Recycling Symbol, required by law in many countries around the world to facilitate the identification of secondary batteries and accumulators for recycling. Ref: IEC 61429: 1995, Marking of secondary batteries and accumulators with the International Recycling Symbol ISO 7000-1135.



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		EC Directives	<u>Directive 2006/66/EC</u>, on batteries and accumulators and waste batteries and accumulators. Paragraph (recital) 29 states: "Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment does not apply to batteries and accumulators used in electrical and electronic equipment." <u>REACH Candidate List (SVHC)</u>. Contains the following substances from the REACH candidate list: Lead (EC 231-100-4, CAS 7439-92-1). Lead monoxide (CAS 1317-36-8) POPs (Persistent Organic Pollutants) Regulation Does not contain any substances subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants. <u>Ozone Regulation (2024/590)</u>. Contains no substances subject to REGULATION (EU) No 2024/590 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 7 February 2024 on substances that deplete the ozone layer. Explosives Precursors Regulation (2019/1148). Contains substance subject to Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 on the placing on the market and use of explosives precursors. ANNEX I RESTRICTED EXPLOSIVES PRECURSORS List of substances that shall not be made available to, introduced into, possessed or used by the general public, either alone or in mixtures or substances including them, unless the concentration is equal to or below the limit values set out in column 2, and for which suspicious transactions and significant disappearances and thefts shall be reported to the relevant national point of contact within 24 hours.
		Proposition 65 (United States)	Warning: Battery terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. Wash hands after handling. Chemicals identified and known to exist in the finished product as distributed in commerce are known to the State of California to cause cancer, birth defects or reproductive harm.
		Volatile Organic Compound Emissions for the product sold to the consumer	This product is not regulated as an end consumer product under the CARB/OTC VOC Regulations as it is sold for the purpose for which it is designed and within the industrial/commercial supply chain.
		All chemicals in this product are included in the CEPA DSL/NDSL or are exempt from the listing requirements (Canada)	This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the Safety Data Sheet, SDS, contains all the information required by the Controlled Products Regulations. Refer to the Controlled Products Regulations for product labeling requirements.
		NPRI and Ontario Regulation 127/01	This product contains lead and sulfuric acid subject to the reporting requirements of Canada's NPRI or Ontario Regulation 127/01.
		List of toxic substances	Lead Acid

SECTION 16: ADDITIONAL INFORMATION

	Componets	
16.1	Revision Information	Updated to Regulation (EU) 2020/878
16.2	Abbreviations	Pb: Lead Acid Ba: Barium Ca: Calcium Sn: Tin PbO₂: Lead Dioxide H₂SO₄: Sulfuric acid VRLA: Valve-regulated lead-acid battery
16.3	Main bibliographic references and data sources	FDS of component and raw material suppliers
16.4	Full text of H-sentences	H302 Harmful if swallowed.
		H314 Causes severe skin burns and eye damage.
		H315 Causes skin irritation.
		H318 Causes serious eye damage.
		H360D May harm the unborn child.
		H360Fd May impair fertility. Suspected of damaging the unborn child.

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		H362	May harm nursing infants.
		H372	Causes damage to organs through prolonged or repeated exposure.
		H400	Very toxic to aquatic life.
		H410	Very toxic to aquatic life with long lasting effects.
16.5	Training tips	- Only trained and competent personnel, who have received special instructions on the hazards and risks, should be allowed to handle VRLA Batteries. - Refer to section 7.1 for general advice.	
16.6	More information about	- Warning: Risk of fire, explosion or burns. Do not disassemble, heat above 50°C or incinerate. - Never short-circuit battery terminals, as the sparks and arcs produced can injure personnel and constitute a fire and explosion hazard. - Batteries should always be charged in a voltage regulated charging system with adequate ventilation to prevent the accumulation of flammable gases and to promote good heat dissipation. - Do not charge VRLA batteries above 50 °C, nor discharge or store them above 60 °C. - Under extreme conditions of charging equipment malfunction and/or battery failure, high voltage and temperature conditions may result in the evolution of hydrogen sulfide gas (H₂S), which is toxic. If detected by its rotten-egg odor (in extremely low concentrations), shut down the charging equipment, evacuate all personnel from the area and ventilate thoroughly. Seek advice before attempting to restart charging - NEVER PLACE VRLA BATTERIES INSIDE SEALED OR GAS-TIGHT ENCLOSURES DURING OPERATION, TRANSPORT AND STORAGE. - VRLA batteries emit hydrogen gas which is highly flammable and will form explosive mixtures in air of approximately 4% to 76%. It can be ignited by sparks of any voltage, naked flames or other sources of ignition.	

Hazardous Materials Identification System (HMIS)	Health: 0
	Flammability: 1
	Physical hazard: 0
National Fire Protection Association	Flammability: 1
	Instability: 1
Legal Notice	The information in the sheet was written based on the best knowledge and experience currently available.
Revision Date	05/02/2025

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. Therefore, it should not be construed as a guarantee of any specific property of the product.