SECTION 1: IDENTIFICATION OF THE PRODUCT AND OF THE MANUFACTURER/SUPPLIER

1.1	**Product Identifier:**	**Valve Regulated Lead-Acid (VRLA) Industrial Battery**
	Classification:	Battery, wet, non-spillable, electric storage **(Mixture)** Substance classification: UN 2800
	Product Codes:	EN & ENL, NP, NPC, NPH, NPL, NPW, RE, REC, REW, SW, SWL, SWL+, TEV, FXH, UXH, UXL, Yucel, YuVolt, YPC and YFT Series of Industrial VRLA Batteries
1.2	**Relevant Identified Uses Of The Product And Uses Advised Against**	*Relevant identified uses*: Standby: Telecoms; UPS; alarm and security systems; emergency lighting; utility switching Cyclic: Golf Trolleys, portable tools, portable lighting, wheelchairs, remote telemetry Energy storage: Photovoltaic energy systems (PVES); wind turbines
		Uses advised against: Automotive, commercial, and agricultural SLI applications *Reason why uses advised against:* High starting and ignition current demands beyond the design of internal and external current carrying components
1.3	**Details Of The Supplier Of The Safety Date Sheet**	**Supplier:** **GS Yuasa Battery Europe Ltd,** **Address**: Unit 8, Ignition Park, Swindon, Wiltshire SN3 5FB United Kingdom **Contact:** **Mike TAYLOR (General Manager – Technical & Compliance)** Tel: (+44) 07733 302 242 e-mail: mike.taylor@yuasaeurope.com Language: English language only Available: Office hours only: 8am to 4pm (08:00 to 16:00)
	National Contacts:	France: Contact: Anthony JAMBON (Technical & Training Manager) Tel: (+33) 0474-95-90-95 e-mail: anthony.jambon@gs-yuasa.fr Language: French & English
		Germany: Contact: Thomas WALLRAFF (Manager Reserve & Renewable Energy &Technical) Tel: (+49) 02151-82095-27 e-mail: Thomas.Wallraff@gs-yuasa.de Language: German & English
		Iberia: Contact: Fernando GARCIA (Industrial Division Sales Manager) Tel: (+34) 091 748 98 19 e-mail: fernando.garcia@gs-yuasa.es Language: Spanish & English
		Italy: Contact: Roberto FICCADENTI (Technical Assistance) Tel: (+39) 02-3800-91-08 e-mail: roberto.ficcadenti@gs-yuasa.it Language: Italian & English
		UK: Contact: Matthew ELWICK (Technical Manager) Tel: (+44) 01793-833-560 e-mail matthew.elwick@gs-yuasa.uk Language: English language only
		Sweden: Contact: Michael KRAFTH (Country Manager) Tel: (+46) 36 47110 e-mail michael.krafth@gs-yuasa.se Language: English & Swedish
1.4	**Emergency telephone number:**	GS Yuasa Battery Manufacturing UK Ltd. Contact: **Mike TAYLOR (General Manager – Technical & Compliance)** Tel: **(+44) 07733 302 242** Opening Hours: Only available during office hours, 8am to 4pm (08:00 to 16:00) Language: English language only Available: Office hours only: 8am to 4pm (08:00 to 16:00)

SECTION 2: HAZARDS IDENTIFICATION – In the event of the internal battery components being 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 damage/irritation 1
	H318	Eye damage/irritation 1
	H360D	Reproductive toxicity 1A,1B
	H360Fd	Repr.1A
	H362	May harm breast fed children
	H372	STOT RE1
	H400	Aquatic Acute 1
	H410	Aquatic Chronic 1

Adverse physicochemical, human health and environmental effects
No additional information available

2.2 Label Elements
Labelling according to Regulation (EC) No. 1272/2008 (CLP)
Hazard Pictograms (CLP)

GHS05 GHS07 GHS08 GHS09

Signal Word (CLP) - DANGER

Hazard Statements (CLP)	H302	Harmful if swallowed
	H314	Causes severe skin burns and eye damage
	H315	Causes skin irritation
	H318	Causes serious eye damage
	H360D	May damage the unborn child
	H360Fd	May damage fertility. Suspected of damaging the unborn child
	H362	May cause harm to breast-fed children
	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

Precautionary 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/fume/gas/mists/vapours/spray
	P264	Wash …. Thoroughly after handling
	P270	Do not eat, drink or smoke when using this product
	P273	Avoid release to the environment
	P280	Wear protective gloves/protective clothing/eye protection
	P303, 361, 353	IF ON SKIN (or hair): Take off Immediately all contaminated clothing. Rinse SKIN with water [or shower].
	P301, 330, 331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
	P304, 340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P305, 351, 338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

2.3 Other Hazards

	VRLA Battery	**Mechanical**	VRLA Batteries can be heavy. Correct manual handling techniques and/or mechanical lifting aides (e.g. Fork Lift Truck) must be used.
		Electrical	VRLA Batteries can contain large amounts of electrical energy which can give very high discharge currents and severe electrical shock if the terminals are short circuited.
		Chemical	• The VRLA Battery presents no chemical hazards during the normal operation provided the recommendations for handling, storage, transport and usage are observed. • VRLA Batteries emit hydrogen gas which is highly flammable and will form explosive mixtures in air from approx. 4% to 76%. This can be ignited by a spark at any voltage, naked flames or other sources of ignition. • If the battery is broken and the 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)[1]**	Substances	Approximate % ($^{w}/_{w}$) **Battery**	Chemical Symbol	CAS No.
Plate Grid		Metallic Lead	40 to 50	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	< 0.1	PbO	1317-36-8
		Lead Dioxide (Lead IV Oxide)	15 to 25	PbO_2	1309-60-0
		Barium compound	< 2	Ba	7440-39-3
Battery Electrolyte	**H314**	Dilute Sulphuric Acid	10 to 20	H_2SO_4	7664-93-9
Case Material		**Standard Grade, UL94:HB** • ABS (Acrylonitrile-Butadiene-Styrene Copolymer)	5 to 10		9003-56-9
		Flame Retardant (FR) Grade, UL94:V0 • ABS (Acrylonitrile-Butadiene-Styrene Copolymer) • Tetrabromobisphenol A • Antimony trioxide	5 to 10 < 1.2% < 0.3%		9003-56-9 79-94-7 1309-64-4
Separator Material		Absorbent Glass Matt (AGM) Separator (100% Borosilicate Glass Microfibre)	1 to 3		65997-17-3

Inorganic lead and battery electrolyte (Dilute Sulphuric Acid) are the main components of VRLA batteries. Other substances may be present but in small amounts dependant on battery type. Contact GS Yuasa Battery Manufacturing UK Ltd for further information.

SECTION 4: FIRST AID MEASURES FOR ACUTE EXPOSURE

This information is of relevance only if the VRLA Battery has suffered damage, is broken and persons have direct contact with the internal components.

4.1 Description of first aid measures

Components		**Action**
Plate Grids and Active materials	Inhalation:	Remove the person from exposure to fresh air. Seek advice from a medical doctor
	Ingestion	Wash out mouth with water and give plenty of water to drink. Do not induce vomiting. Seek advice from a medical doctor
	Skin Contact:	Wash off with plenty of water and soap to prevent accidental ingestion or inhalation Seek medical advice if pain or rash does not reduce
	Eye Contact:	**Immediately** irrigate with eyewash solution or clean water for at least 10 minutes, holding the eyelids apart. Then take the person to hospital without further delay
	Self-protection for the first aider	Eye protection (safety glasses or face shield), and heavy-duty gloves are required. In case of inhalation, a face mask or respirator may be required.
Battery Electrolyte		**SPEED IS ESSENTIAL - OBTAIN IMMEDIATE MEDICAL ATTENTION.**
	Inhalation:	Remove the person from exposure to fresh air. If the person continues to feel unwell seek advice from a medical doctor.
	Ingestion	Wash out mouth with water and give plenty of water to drink. Do not induce vomiting. If the person continues to feel unwell seek advice from a medical doctor.

		Skin Contact:	Drench with large quantities of water. Remove contaminated clothing and place in water to dilute the acid Continue to wash the affected area for at least 10 minutes. Seek advice from a medical doctor
		Eye Contact:	**SPEED IS ESSENTIAL - OBTAIN IMMEDIATE MEDICAL ATTENTION** **Immediately** irrigate with eyewash solution or clean water for at least 10 minutes, holding the eyelids apart. Then take the person to hospital without further delay
		Self-protection for the first aider	Eye protection (safety glasses or face shield), and heavy-duty gloves are required. In case of inhalation, a face mask or respirator may be required.
	Case Material	Inhalation:	Material can burn in a fire with toxic smoke and decomposition products. Upon inhalation of decomposition products, keep patient calm, remove to fresh air, and seek advice from a medical doctor. If a large quantity is inhaled take the person to hospital. **Note to physician**: Treat according to symptoms (decontamination, vital functions), no known specific antidote.
		Ingestion	Wash out mouth with water and give plenty of water to drink. Do not induce vomiting. If the person continues to feel unwell seek advice from a medical doctor.
		Skin Contact:	Areas affected by molten material should be quickly placed under cold running water and a sterile protective dressing applied. Seek advice from a medical doctor.
		Eye Contact:	May cause irritation or injury due to mechanical action and traces of Battery Electrolyte. **Immediately** irrigate with eyewash solution or clean water for at least 10 minutes, holding the eyelids apart. Then take the person to hospital without further delay
		Self-protection for the first aider	Eye protection (safety glasses or face shield), and disposable gloves are required. In case of inhalation, a face mask or respirator may be required.
	Separator Material	Inhalation:	Remove patient from exposure to fresh air. If irritation persists, seek advice from a medical doctor
		Ingestion	Wash out mouth with water and give plenty of water to drink. Do not induce vomiting. If the person continues to feel unwell seek advice from a medical doctor.
		Skin Contact:	After contact with skin, wash immediately with plenty of soap and water. If irritation persists, seek advice from a medical doctor
		Eye Contact:	May cause irritation or injury due to mechanical action and traces of Battery Electrolyte. **Immediately** irrigate with eyewash solution or clean water for at least 10 minutes, holding the eyelids apart. Then take the person to hospital without further delay
		Self-protection for the first aider	Eye protection (safety glasses or face shield), and disposable gloves are required. In case of inhalation, a face mask or respirator may be required.
4.2	**Most important symptoms and effects, both acute and delayed**		
	Symptoms/effects		Causes damage to organs through prolonged or repeated exposure.
	Symptoms/effects after inhalation		Harmful if inhaled. If a battery ruptures, may be harmful or fatal if inhaled in a confined area.
	Symptoms/effects after skin contact		Causes severe burns. 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.

SECTION 5: FIRE-FIGHTING AND EXPLOSION HAZARD MEASURES

5	**VRLA Battery**	General Information: Explosion Hazard 	• VRLA Batteries emit hydrogen gas which is highly flammable and will form explosive mixtures in air from approx. 4% to 76%. This can be ignited by a spark at any voltage, naked flames or other sources of ignition. • Batteries in use will be part of an electrical circuit and must be isolated from the power source before attempting to put out a fire. Switch the power **OFF** before disconnecting the batteries from the power source. • Damaged batteries may expose negative plates, grey in colour, which may ignite if allowed to dry out. These plates may be wetted down with water after the battery has been removed from all electrical circuits.
5.1		Suitable Extinguisher types:	CO_2; Dry Powder are recommended for electrical fires
		Unsuitable Extinguisher types	Water extinguishers must never be used to put out an electrical fire.
5.2		Hazardous combustion & decomposition products:	Carbon monoxide, Sulphur Dioxide, Sulphur Trioxide, Lead fume and vapour, toxic fumes from decomposition of battery case materials.
5.3		Advice for fire-fighters	Full face visor or safety goggles; Respiratory equipment or self-contained breathing apparatus (SCBA); Full acid resistant protective clothing must be worn in fire-fighting conditions.

SECTION 6: ACCIDENTAL RELEASE MEASURES

This information is of relevance only if the VRLA Battery has suffered damage and is broken.

6	**Components**		
	VRLA Battery		VRLA batteries are designed to be safe to handle and not to leak battery electrolyte under normal conditions. In case of accidental damage heavy-duty gloves are required to pick-up the battery to protect against unseen electrolyte leakage
	Plate Grids and Active Materials	Personal Precautions:	Eye protection (safety glasses or face shield), and heavy-duty gloves are required. If the material is wet, a face mask or respirator is not required If the material is dry, a face mask or respirator is required
		Clean-up Methods:	Large, solid pieces may be picked up and bagged for recycling. Never use a brush to sweep up debris; it may create Lead-dust in the air. Wet clean the spill area to remove all traces of debris. Battery debris and cleaning materials must be collected and placed in an inert sealed container (e.g. self-seal plastic bag or bucket) for disposal, see Section 13.
		Environmental Precautions:	Do not allow material to enter a watercourse. Exposed Lead materials must be placed in an inert sealed container (e.g. self-seal plastic bag or bucket) for disposal, see Section 13.
	Battery Electrolyte:	Personal Precautions:	Ensure suitable, acid resistant personal protective clothing (including heavy-duty gloves, safety glasses and respiratory protection) is worn during removal and clean-up of spillages.
		Clean-up Methods: Small spillages:	Neutralise and absorb the spillage using soda ash, sodium bicarbonate (available from supermarkets), sodium carbonate or calcium carbonate powder. Wet clean the spill area to remove all traces of debris. Battery debris and cleaning materials must be collected and placed in an inert sealed container (e.g. self-seal plastic bag or bucket) for disposal, see Section 13.
		Large spillages:	Large amounts of electrolyte spillage are unlikely with VRLA batteries since the electrolyte is fully absorbed in the active materials and separator. Bund the spillage area using dry sand, earth, sawdust or other inert material. Neutralise the electrolyte using soda ash, sodium bicarbonate (available from supermarkets), sodium carbonate or calcium carbonate powder. Wet clean the spill area to remove all traces of debris and electrolyte. Cleaning materials must be collected and placed in an inert sealed container (e.g. self-seal plastic bag or bucket) for disposal, see Section 13.
		Environmental Precautions:	Battery electrolyte must not be allowed to enter any drains or sewage system or water course.
	Case Material:	Clean-up Methods:	Assume battery case material is contaminated and proceed as for **Plate Grids and Active Materials** above.
	Separator Material:	Clean-up Methods:	Assume battery case material is contaminated and proceed as for **Plate Grids and Active Materials** above.

Note: If appropriate refer to 8 and 13

SECTION 7: HANDLING AND STORAGE

7.1	**Component:**		
	VRLA Battery	Precautions For Safe Handling:	Only trained operators should be allowed to handle VRLA batteries.
			PPE: No specialist protective clothing or equipment is required, except that for handling heavy weights.
			Hygiene: There are no specialist requirements beyond good, standard workplace practices,
			Mechanical lifting aides: (e.g. FLT and pallet trucks) will be required to move pallets of batteries. Weight approximately 1 tonne
			Mechanical handling aides: (e.g. trucks and lifters) will be required to handle individual batteries over 25 kg in weight.
			General Safety Considerations: Do not drop batteries: dents and deformation of the case may be an indication of internal damage to the battery. Cracks will allow electrolyte to escape. Do not place VRLA Batteries lid-to-lid so that terminals will short-circuit.
7.2		Conditions For Safe Storage, Including Any Incompatibilities:	Store VRLA Batteries in a cool, well-ventilated area with a solid, impervious surface, and adequate containment in the event of accidental acid spillage.
			Store under a roof and protect against direct sunlight and adverse weather conditions including rain, snow and other sources of water.
			Storage of large quantities of VRLA batteries may require approval from local environmental protection agency and/or local water authorities.

			Pallets of VRLA Batteries are heavy. Store at ground level or in lower levels of storage systems (e.g. racking).
			Take special care in dry conditions to avoid the risk of electrostatic discharges.
			Protect against physical damage and exposure to organic solvents and other incompatible materials.
			Do not store VRLA batteries close to sources of heat, naked flames and sparks.
			Store batteries in their original packaging wherever possible. When batteries are removed from their original packaging (e.g. for transportation of small quantities), ensure new packaging protects the batteries from damage and the risk of short-circuit of the terminals.
		End-of-Life (EC WEEE Regulations)	Ensure batteries are removed from equipment at the end of life and are collected for recycling by an approved 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

SECTION 8: EXPOSURE CONTROL / PERSONAL PROTECTION

	Components		
8.1	**VRLA Battery**	Control Parameters:	There are no special control parameters for the handling, storage, installation of VRLA Batteries.
			VRLA Batteries emit hydrogen gas which is highly flammable and will form explosive mixtures in air from approximately 4% to 76%. Never install VLRA Batteries in a gas-tight enclosure during storage, transport or usage.
8.2		Exposure Control:	There are no special exposure controls for the handling, storage, installation or use of VRLA Batteries.
8.3		Personal Protection:	When there is no evidence of damage or visible traces of liquid (electrolyte) or solid deposits on the batteries they may be handled safely without extra personal protective equipment. Ensure electrical insulation equipment is used when installing batteries. (e.g. insulated mats and covers; insulated tools) Remove ALL metallic objects from the person when working with VRLA Batteries: e.g. Jewellery (rings, watches, bracelets, necklaces), pens, torches, etc. Where there are signs of damage or liquid (electrolyte) or solid deposits, rubber gloves and acid resistant clothing must be worn when handling the batteries and affected packaging to protect against the effects of any electrolyte that may be present. If it is suspected that free electrolyte is present, then safety glasses must be worn, and if large amounts are present, chemical goggles or face shield should be used.
		UL CAUTIONARY STATEMENT:	"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** above. • The undamaged product is a manufactured article in an inert plastic (ABS) case, which will burn if subjected to high temperatures or sources of ignition. Some battery types are made with Flame Retardant ABS cases, see technical specification. These batteries carry the suffix 'FR' after the battery type; e.g. NP24-12IFR

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

	Plate Grids and Active materials:	Appearance		Safety-related data	
		Form	Solid	*Solidification point*	327 °C
		Colour	Grey or brown	*Boiling point*	1740 °C
		Odour	Odourless	*Solubility in water*	Very low (0.15mg/l)
				Solubility in acid or alkaline solutions	Yes, dependant on the strength of solution.
				Density (at 20°C)	11.35 g/cm^3
				Vapour pressure (at 20°C)	Undetectable
	Battery Electrolyte:				
		Form	Liquid	*Solidification point*	-35 to -60 °C
		Colour	Colourless	*Boiling point*	Approx. 108 to 114 °C
		Odour	Odourless	*Solubility in water*	Complete
				Density (at 20°C)	Variable up to 1.350 g/cm^3
				Vapour pressure (at 20°C)	10-20 mmHg

	Case Material:	Appearance		Safety-related data	
		Form	Solid	*Softening point*	> 100 °C (DIN 53460)
		Colour	Grey or black	*Flash Point*	>330 °C
		Odour	Slight Odour	*Solubility in water*	Insoluble
				Solubility in other solvents	Soluble in polar solvents, aromatic solvents, chlorinated hydrocarbons.
				Density (at 20°C)	1.07-1.4 g/cm^3 (DIN 53479)
				Vapour pressure (at 20°C)	Undetectable
	Separator Material:				
		Form	Fibrous material	*Solidification point*	820°C
		Colour	White	*Boiling point*	>2500°C
		Odour	Odourless	*Solubility in water*	Insoluble
				Density (at 20°C)	2.23g/cm^3
				Vapour pressure (at 20°C)	Undetectable

SECTION 10: STABILITY AND REACTIVITY

	Components		
10.1	**VRLA Battery**	Reactivity:	Within the operational temperature range -20 to +50 °C the undamaged product is stable. Stable under recommended handling and storage conditions (see section 7).
10.2		Chemical stability:	Stable under recommended handling and storage conditions (see section 7).
10.3		Possibility of hazardous reactions	Hazardous polymerisation will not occur.
10.4		Conditions to avoid	Overcharging. Remove all sources of ignition. If battery ruptures, avoid contact with organic materials and alkaline materials. mechanical impacts.
10.5		Incompatible materials	Strong bases. Strong acids.
10.6		Hazardous decomposition products	Lead compounds and sulfuric acid fume may be released during a fire involving the product.

SECTION 11: TOXICOLOGICAL INFORMATION

This information is of relevance only if the VRLA Battery has suffered damage and is broken.

	Components		
11	**VRLA Battery**		• This information does not apply to the undamaged VRLA Battery. It is of relevance if the battery is broken and the components are released to the environment. • Exposure limits may vary according to national law and regulations.
11.1	**Plate Grids: Metallic Lead, Lead alloys.**	Acute Toxicity 	• Toxic by ingestion or inhalation • Chronic poison • Lead is a poison that affects virtually every system in the body • Symptoms include fatigue, headaches, constipation, aching bones and muscles, gastrointestinal tract disturbances and reduced appetite • Blood Lead levels of 80 µg/dl and above have been associated with both acute and chronic effects of Lead poisoning
	Active materials: Lead dioxide.	Acute Toxicity 	• Toxic by ingestion or inhalation • Chronic poison • Chronic exposure to Lead compounds may lead to a build-up of Lead in the body, giving rise to a variety of health problems, including anaemia, kidney and liver damage, impaired eyesight, memory loss and CNS[2] damage
	Battery Electrolyte:	Corrosive 	Corrosive, the more concentrated solutions can cause serious burns to the mouth, eyes and skin Harmful by ingestion and through skin contact
		Inhalation:	Mist is a severe irritant to the respiratory tract. Fluid build-up on the lung (pulmonary oedema) may occur up to 48 hours after exposure and could prove fatal

[2] CNS = Central Nervous System

			
		Ingestion: 	Will immediately cause severe corrosion of and damage to the gastrointestinal tract
11.1	**Battery Electrolyte:**	Skin Contact: 	Causes severe chemical burns
		Eye Contact: 	Risk of serious damage to eyes. Causes severe burns. May cause prolonged or permanent damage or even total loss of sight. Mist will cause irritation
	Case Material:		According to information available the product is not harmful to health provided it is correctly handled and processed according to the given recommendations.
	Separator Material:		Based on animal implantation and epidemiologic studies glass microfibers are thought to have some limited carcinogenic potential and as such are designated as Group 2B materials (IARC, US). The material should be treated as a category 3 carcinogen (Europe). Limited evidence of carcinogenic effect.

11.1	**Valve Regulated AGM Non-Spillable Battery**	ATE CLP (oral)	500 mg/kg bodyweight
		ATE CLP (dust,mist)	1.667 mg/l/4h
	Tin (7440-31-5)	LD50 oral, rat	> 2000 mg/kg bodyweight
		LD50 dermal, rat	> 2000 mg/kg bodyweight
	Lead (Pb) (7439-92-1)	LD50 oral, rat	> 2000 mg/kg bodyweight
		LD50 dermal, rat	> 2000 mg/kg bodyweight
		LC50 inhalation, rat (mg/l)	> 5.05 mg/l (4 hours)
	Skin corrosion/irritation	: Causes severe skin burns.	
	Serious eye damage/irritation	: Causes serious eye damage	
	Serious eye damage/irritation	: Not classified	
	Germ cell mutagenicity	: Not classified	
	Carcinogenicity	: Not classified	
	Reproductive toxicity	: May damage fertility or the unborn child. May cause harm to breast-fed children.	
	STOT-single exposure	: Not classified	
	STOT-repeated exposure	: Causes damage to organs through prolonged or repeated exposure.	
	Lead (Pb) (7439-92-1)	STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
	Lead dioxide (1309-60-0)	STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.
	Lead sulphate (7446-14-2)	STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

SECTION 12: ECOLOGICAL INFORMATION

This information is of relevance only if the VRLA Battery has suffered damage and is broken.

	Components		
12.1	**VRLA Battery**		This information does not apply to the undamaged VRLA Battery. It is of relevance if the battery is broken and the components are released to the environment.
12.2	**Plate Grids and Active materials:**	Metallic Lead, Lead alloys and Lead dioxide. 	Chemical and physical treatment is required for the elimination of Lead from water. Waste water containing Lead must not be disposed of in an untreated condition.
		Ecotoxicity:  H Phrase H400 &410	• Lead metal in massive form is not classified as hazardous to the aquatic environment, due to its low solubility and rapid removal from the water column. Inorganic lead compounds are considered to be acutely toxic in the environment and also to present a long-term hazard to aquatic organisms.
		Effect in the aquatic environment: 	• Toxicity for fish: 96 h LC 50 > 100 mg/l • Toxicity for daphnia: 48 h EC 50 > 100 mg/l • Toxicity for alga: 72 h IC 50 > 10 mg/l
12.3	**Battery Electrolyte:**	Ecotoxicity: 	• In order to avoid damage to the sewerage system, the acid has to be neutralised by means of soda ash, sodium bicarbonate or sodium carbonate before disposal. • Ecological damage is possible by change of pH. The electrolyte solution reacts with water and organic substances, causing damage to flora and fauna. • The electrolyte may also contain components of Lead that can be toxic to aquatic environments.
		Persistence and Degradation:	Remains indefinitely in the environment as sulphate.
12.4	**Case Material:**	Elimination information:	No data available: insoluble in water
		Behaviour and environmental fate:	Due to the consistency of the product, and its insolubility in water, it will apparently not be bio-available.
12.5	**Separator Material:**		No data available: insoluble in water Not thought to pose any risk to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

	Components		
13.1	**VRLA Battery**	Europe:	• Spent (Used) VRLA Batteries are subject to the requirements of Regulation (EU) *2023/1542 on batteries and waste batteries. At the end of their service life, spent (used) VRLA batteries must be collected and sent for recycling through an authorised and approved contractor, in accordance with the Regulation's provisions on waste management and extended producer responsibility. • The WEEE Directive 2002/96/EC (Waste Electrical and Electronic Equipment) applies. Spent (used) VRLA Batteries MUST be removed from electrical and electronic equipment at the end-of-life.
		Worldwide:	• VRLA batteries contain inorganic Lead compounds and Sulphuric Acid which are damaging to the environment. • Spent (used) batteries must be disposed of in an environmentally friendly manner in accordance with local national laws and regulations.

			• VRLA batteries must not be dismantled, burnt or incinerated as a means of disposal. • At the end of life VRLA batteries may still be electrically 'live' and contain a large amount of electrical energy. The same care and attention to safe handling should be taken as when handling new batteries. Particular care must be taken to avoid short-circuiting the battery terminals.
13.2	**Plate Grids and Active materials:**	Europe Worldwide	• Metallic Lead and active materials (Lead Oxides) must be recycled. • Disposal must be carried out 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 Hazardous Waste Directive 2008/98/EC on the protection of the environment through criminal law
		Worldwide	• Disposal should be in accordance with local, state or national legislation.
		General	• Battery electrolyte is dilute Sulphuric Acid, the strength of which depends on the state of charge of the batteries. It must be neutralised before disposal. See SECTION 6 for clean-up and disposal advice.
13.3	**Case Material:**		• Do not dispose of this product into sewers, any ocean or water course in order to prevent marine animals and birds from ingesting. • Recycling is encouraged. • Disposal by controlled incineration or source landfill in accordance with local national laws and regulations may be acceptable.
13.4	**Separator Material:**		• Constitutes a special waste by virtue of hazardous substance content. • Dispose of via approved landfill site. Disposal by controlled source landfill in accordance with local national laws and regulations may be acceptable.

SECTION 14: TRANSPORT INFORMATION

	Components		
14.1	**VRLA Battery**	Land Transport (ADR) 	Land Transport (ADR / RID) • UN N°: UN2800 • Classification ADR / RID: Class 8 • Proper Shipping Name: BATTERIES, WET, NON-SPILLABLE electric storage • Packing Group ADR: not assigned • Tunnel code: E • ADR / RID: New and spent (used) batteries are exempt from all ADR / RID (special provision 598)
		Sea Transport (IMDG) 	Sea transport (IMDG Code) • UN N°: UN2800 • Classification: Class 8 • Proper Shipping Name: BATTERIES, WET, NON-SPILLABLE electric storage • EmS: F-A, S-B Non-Spillable batteries meet the requirements of Special Provision 238 parts 1 & 2; they are exempt from all IMDG codes and are not subject to special regulation for sea transport
		Air Transport (IATA) 	Air Transport (IATA-DGR) • UN N°: 2800 • Classification: Class 8 • Proper Shipping Name: BATTERIES, WET, NON-SPILLABLE electric storage • Special Provision A48: Packaging test are not considered necessary • Special Provision A67: Yuasa's VRLA batteries meet the requirements of Packing Instruction 872. The battery has been prepared for transport so as to prevent: a) A short-circuit of the battery's terminals by packaging in a strong and sturdy carton box; AND/OR b) The battery has been fitted with an insulating cover (made from ABS) which prevents contact with the terminals. c) Unintentional activation is thus prevented The words "NOT RESTRICTED" and the Special Provision (SP) number must be indicated on all shipping documents • Special Provision: A164: The battery has been prepared for transport so as to prevent: a) Short-circuit of the battery's terminals by packaging in a strong and sturdy carton box; AND/OR b) The battery has been fitted with a cover (made from ABS) which prevents contact with the terminals c) Unintentional activation is thus prevented

SECTION 15: REGULATORY INFORMATION

	Components		
15.1	**VRLA Battery**	Required Markings:	
			Crossed-out wheeled bin indicating "**SEPARATE COLLECTION**" for all batteries and accumulators. Not to be disposed of with general domestic, commercial or industrial waste. Ref: EU 2023/1542 concerning batteries and waste batteries (Annex VI)
		Pb	The **Pb** symbol indicates the heavy metal content of the battery and enables the Lead-Acid battery to be sorted for recycling. Ref: EU 2023/1542 concerning batteries and waste batteries (Annex VI)
			The International Recycling Symbol, required by law in many countries world-wide to facilitate the identification of secondary batteries and accumulators for recycling. Ref: IEC 61429 : 1995, Marking of secondary cells and batteries with the International Recycling Symbol ISO 7000-1135.
		EU & EC Regulations & Directives	EU 2023/1542 concerning batteries and waste batteries 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." REACH Candidate List (SVHC) Contains the following substances from the list of candidate substances of REACH: Lead (EC 231-100-4, CAS 7439-92-1) Tetrabromobisphenol A (EC 201-236-9, CAS 79-94-7) only for FR (V0) models PIC Regulation (Prior Informed Consent) Substances subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals: lead dioxide (1309-60-0), lead sulphate (7446-14-2) POP Regulation (Persistent Organic Pollutants) Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants Ozone Regulation (1005/2009) Contains no substance subject to REGULATION (EU) No 1005/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 September 2009 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 marketing and use of explosives precursors. ANNEX I RESTRICTED EXPLOSIVES PRECURSORS List of substances which shall not be made available to, or introduced, possessed or used by, members of the general public, whether on their own or in mixtures or substances that include those substances, unless the concentration is equal to or lower than the limit values set out in column 2, and for which suspicious transactions and significant disappearances and thefts are to be reported to the relevant national contact point within 24 hours.

SECTION 16: OTHER INFORMATION

	Components	
16 (a)	**Revision Information**	*Issue 23: 15/10/2025 Directive 2006/66/EC was repealed and replaced with Regulation 2023/1542
16 (b)	**Abbreviations**	**Pb** – the chemical symbol for Lead **Ba** – the chemical symbol for Barium **Ca** – the chemical symbol for Calcium **Sn** – the chemical symbol for Tin **PbO_2** – the chemical formulae for Lead Dioxide **H_2SO_4** – the chemical formulae for Sulphuric Acid **VRLA** – **V**alve **R**egulated **L**ead-**A**cid battery
16 (c)	**Key literature references and sources of data**	SDS documents from suppliers for components and raw materials
16 (d)	**Full text of H phrases:**	H302 – Harmful if swallowed H314 – Causes severe skin burns and eye damage H315 – Causes skin irritation H318 – Causes serious eye damage H360D – May damage the unborn child H360Fd – May damage fertility. Suspected of damaging the unborn child H362 – May cause harm to breast-fed children 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 (e)	**Training Advice**	• Only trained, competent personnel, who have received special instructions for the hazards and risks, should be allowed to handle VRLA Batteries. • See Section 7.1 for general advice
16 (f)	**Further Information**	To ensure the safe use of VRLA Industrial Batteries supplied by GS **YUASA**, the following precautions must be observed: • Warning: Risk of fire, explosion, or burns. Do not disassemble, heat above 50°C, or incinerate. • Never short-circuit battery terminals, since sparks and arcs produced can injure personnel and are a fire and explosion hazard. • Batteries must always be charged on a voltage-regulated charging system with adequate ventilation provided to avoid the build-up of ignitable gases and to promote good heat dissipation. • Do not charge VRLA Batteries above + 50 ºC, discharge or store above + 60 ºC. • Under extreme conditions of charging equipment malfunction and/or battery failure, high voltage and high temperature conditions may occur causing the evolution of Hydrogen Sulphide (H_2S) gas, which is toxic. If detected by its odour of rotten eggs (at extremely low concentrations), switch off the charging equipment, evacuate all personnel from the area and ventilate well. Seek advice before attempting to re-start 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 from approximately 4% to 76%. This can be ignited by a spark at any voltage, naked flames or other sources of ignition

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. It should not therefore be construed as guaranteeing any specific property of the product