SECTION 1：IDENTIFICATION OF THE PRODUCT AND THE MANUFACTURER

Product Identifier：	Valve Regulated Lead-Acid （VRLA） Industrial Battery
Classification：	Battery, wet, non-spillable, electric storage （Mixture） UN/ID No.：UN 2800
Product Codes：	NP、NPH、NPX、NPW、NPA、NPL、RE、REW、REC、U1、UXH、UXL、UXW、SW、SWH、SWL、SUL、FNPA、FXH、FXC、FXL、FTN、TRE、UPZ、PW、PYL、PWL、UXC、SWU、Y Series of Industrial VRLA Batteries
Relevant Identified Uses of The Product and Uses Advised Against	Relevant identified uses： Standby：Telecom; UPS; alarm and security systems; emergency lighting; utility switching Cyclic：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
Company / identification	Taiwan Yuasa Battery Co., Ltd.
Address	No.11, Ln. 227, Fuying Rd., Xinzhuang District, New Taipei City, Taiwan
Emergency telephone	886-2-29018261

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）	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
Labeling according to：

Occupational Safety and Health Administration （OSHA） Hazard Communication 29 CFR 1910.1200（f） Hazard Pictograms （OSHA – U.S.A.）	Classification according to Regulation （EC） No 1272/2008 [CLP] Hazard Pictograms （CLP）
	 GHS05 GSH07 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; May damage 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/vapors/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., Forklift 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

Substances present in the product						
Components	Classification according to Regulation （EC） No. 1272/2008 （CLP）	Substances	Approximate% （w/w） Battery	Chemical Symbol	CAS No.	CUS
Plate (Grids and Active materials)		Metal Lead	40~50	Pb	7439-92-1	0150530-2
		Calcium	<0.1	Ca	7440-70-2	0012766-2
		Tin	<1	Sn	7440-31-5	0011096-3
	H360 H372 H400 H410	Lead Oxide	<0.1	PbO	1317-36-8	0131593-1
		Lead Dioxide	15~25	PbO_2	1309-60-0	0131594-2
		Barium compound	<2	Ba	7440-39-3	0011384-8
Battery Electrolyte	H314	Dilute Sulfuric Acid	10~20	H_2SO_4	7664-93-9	0023808-4
Case Material		Standard Grade, UL94:HB ABS（Acrylonitrile-Butadiene-Styrene Copolymer）	5-10		9003-56-9	0132851-4
		Flame Retardant （FR） Grade, UL94:V0 ABS （Acrylonitrile-Butadiene-Styrene Copolymer） Tetrabromobisphenol A （$C_{15}H_{12}Br_4O_2$） Antimony trioxide	5-10 <1.2 <0.3		9003-56-9 79-94-7 1309-64-4	0132851-4 0015260-3 0011242-5
Separator Material		Absorbent Glass Matt （AGM） Separator （100% Borosilicate Glass Microfiber）	1-3		65997-17-3	0110492-3
Inorganic lead and battery electrolyte （Dilute Sulfuric Acid） are the main components of VRLA batteries. Other substances may be present but in small amounts dependent on battery type.						

SECTION 4：FIRST AID MEASURES

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

Description of first 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

SECTION 5：FIREFIGHTING MEASURES

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, gray in color, 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.
	Suitable Extinguisher types	CO_2; Foam; Dry Powder.
	Unsuitable Extinguisher types	Water extinguishers must never be used to put out an electrical fire.
	Hazardous combustion & decomposition products	Carbon monoxide, Sulfur Dioxide, Sulfur Trioxide, Lead fume and vapor, toxic fumes from decomposition of battery case materials.
	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.

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 Large spillages	Neutralize 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 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. Neutralize 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

Components		
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 ton.
		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.
	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. 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.
	Specific End Uses：Installation	1. Refer to IEC 62485-1, Safety requirements for secondary batteries and battery installations – Part 1：General safety information. 2. Refer to IEC 62485-2, Safety requirements for secondary batteries and battery installations – Part 2：Stationary batteries.

SECTION 8：EXPOSURE CONTROLS / PERSONAL PROTECTION

Components		
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.
	Exposure Control	There are no special exposure controls for the handling, storage, installation, or use of VRLA Batteries.
	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., Jewelry （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	
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., NP7-12FR.

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.

	Appearance	Safety-related data

Plate (Grids and Active materials)	Form	Solid	Solidification point	327°C
	Color	Gray or brown	Boiling point	1740°C
	Odor	Odorless	Solubility in water	Very low （0.15mg/l）
			Solubility in acid or alkaline solutions	Yes, dependent on the strength of solution
			Density （at 20°C）	11.35 g/cm3
			Vapor pressure （at 20°C）	Undetectable
			pH	Undetectable
			Flash point	Non flammable
Battery Electrolyte	Form	Liquid	Solidification point	-35 to -60°C
	Color	Colorless	Boiling point	Approx. 108 to 114°C
	Odor	Odorless	Solubility in water	Complete
			Density （at 20°C）	Variable up to 1.350 g/cm^3
			Vapor pressure （at 20°C）	10-20 mmHg
			pH	≤1.0
			Flash point	Non flammable
Case Material	Form	Solid	Solidification point	> 100°C（DIN 53460）
	Color	Gray or black	Solubility in water	Insoluble
	Odor	Slight Odor	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）
			Vapor pressure （at 20°C）	Undetectable
			pH	Undetectable
			Flash point	>330℃
Separator Material	Form	Fibrous material	Solidification point	820°C
	Color	White	Boiling point	> 2500° C
	Odor	Odorless	Solubility in water	Insoluble
			Density （at 20°C）	2.23g/cm^3
			Vapor pressure（at 20°C）	Undetectable
			pH	Undetectable
			Flash point	Non flammable

SECTION 10：STABILITY AND REACTIVITY

Components		
VRLA Battery	Stability	Within the operational temperature range -20 to +50°C the undamaged product is stable.
Plate Grids and Active materials	Materials & Conditions to Avoid	Powdered Lead reacts violently with fused ammonium nitrate and sodium acetylide. Reacts violently when in contact with chlorine trifluoride.
Battery Electrolyte	Possibility of Hazardous Reactions	• Dilution of the higher concentrated grades with water may liberate excessive heat. • Highly reactive with metals and organic materials. • On 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
Case Material	Materials & Conditions to Avoid	• To avoid thermal decomposition, do not overheat.Starts to decompose at temperatures > 275°C. • Powerful oxidizing agents.
	Hazardous decomposition products	• Monomers, other degradation products, traces of hydrogen cyanide.
Separator Material	Stability	• Stable material.
	Materials & Conditions to Avoid	• Incompatible with Hydrofluoric acid and concentrated Sodium Hydroxide.
	Hazardous decomposition products	• No hazardous polymerization expected.

SECTION 11：TOXICOLOGICAL INFORMATION

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

Components		
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.
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 bodySymptoms include fatigue, headaches, constipation, aching bones and muscles, gastrointestinal tract disturbances and reduced appetite Blood Lead levels of 80 gg/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 anemia, kidney and liver damage, impaired eyesight, memory loss and CNS[1] 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.
	Ingestion 	Will immediately cause severe corrosion of and damage to the gastrointestinal tract.
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.

1 CNS = Central Nervous System

SECTION 12：ECOLOGICAL INFORMATION

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

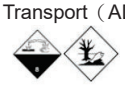
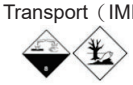
Components		
VRLA Battery		This information does not apply to the undamaged VRLA Battery. It is of relevance if the battery is broken and the components are released to the environment.
Plate Grids and Active materials	Metallic Lead, Lead alloys and Lead dioxide 	Chemical and physical treatment is required for the elimination of Lead from water. Wastewater 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
Battery Electrolyte	Ecotoxicity 	• To avoid damage to the sewerage system, the acid must be neutralized 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.
Case Material	Elimination information	No data available: insoluble in water.
	Behavior and environmental fate	Due to the consistency of the product, and its insolubility in water, it will apparently not be bioavailable.
Separator Material		No data available：insoluble in water Not thought to pose any risk to the environment.

SECTION 13：DISPOSAL CONSIDERATIONS

Components		
VRLA Battery	Europe	• Spent （used） VRLA Batteries are subject to the requirements of the Batteries 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-life. • 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 Sulfuric 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. Care must be taken to avoid short-circuiting the battery terminals.
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
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. • Battery electrolyte is dilute Sulfuric Acid, the strength of which depends on the state of charge of the batteries. It must be neutralized before disposal. See SECTION 6 for clean-up and disposal advice.
Case Material		• Do not dispose of this product into sewers, any ocean or water course 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.
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		
VRLA Battery	Land Transport（DOT）	Land Transport （DOT - 49 C FR 173.159（f））UN No：UN2800 • UN No：UN2800 • Classification：Class 8 • Proper Shipping Name：BATTERIES, WET, NON-SPILLABLE electric storage • Packing Group：III • Hazard Label：8 Special Provisions/Exceptions: 173.159a
	Land Transport（ADR） 	Land Transport （ADR / RID）UN No：UN2800 • UN No：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 No：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 No：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 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 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		
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: The Batteries 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: The Batteries Directive 2006/66/EC.
		The International Recycling Symbol, required by law in many countries worldwide 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.
	EC Directives	Directive 2006/66/EC, 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. ” 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 sulfate （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			
TSCA （U.S.A.）	The following battery components are listed in TSCA （Toxic Substance Control Act）		
	Components	Substance	CAS No.
	Electrolyte	Sulfuric acid （H_2SO_4+H_2O）	7664-93-9
	Plate(Grids and Active materials)	Lead （Pb）	7439-92-1
		Lead compounds（PbO_2）	1309-60-0
		Lead sulfate （$PbSO_4$）	7446-14-2
		Calcium （Ca）	7440-70-2
		Tin （Sn）	7440-31-5
		Barium （Ba）	7440-39-3
	Battery Container & Cover	Antimony trioxide （Sb_2O_3）	1309-64-4
		Tetrabromobisphenol A （$C_{15}H_{12}Br_4O_2$）	79-94-7
California Proposition 65	Battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the state of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling. www.P65Warnings.ca.gov		
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	
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 for general advice.		
Further Information	• To ensure the safe use of VRLA Industrial Batteries supplied by 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°C, discharge or store above + 60°C.		

	• Under extreme conditions of charging equipment malfunction and/or battery failure, high voltage and high temperature conditions may occur causing the evolution of Hydrogen Sulfide （H_2S） gas, which is toxic. If detected by its odor 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.