Section 1. PRODUCT IDENTIFICATION

Product Name	Valve regulated lead acid (VRLA) battery
Other Names	Electric storage, AGM (Absorbed Glass Mat), Lead Acid Battery-Non-Spillable, Gel Battery
Use	Automotive, Industrial Standby Power and Motive Power.
Supplier Name and Address	Century Yuasa Batteries 259 Church St, Onehunga, Auckland 1643
Telephone	0800 93 93 93
Emergency (24 Hours)	(02) 7468 6673
Relevant identified uses	Starting, lighting, ignition for car, truck, DC storage

Section 2. HAZARDS IDENTIFICATION

Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms (HSNO) legislation. Classified as Dangerous Goods for transport purposes.

Signal Word **DANGER**

GHS Classification Metal Corrosion Category 1, Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 3, Skin Corrosion/Irritation Category 1A, Serious Eye Damage Category 1, Carcinogen Category 1A, Reproductive Toxicity Category 1A, STOT - SE (Resp. Irr.) Category 3*, STOT - RE Category 2, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1
**LIMITED EVIDENCE*

HSNO Classification 6.1D (inhalation), 6.1E (oral), 6.7A (presumed), 6.9A (inhalation), 8.1A, 8.2B, 8.3A, 9.1 (fish, crustacean), 9.3B

GHS Label Elements


Corrosive


Acute toxicity


Health Hazard


Environment

IN THE EVENT OF THE INTERNAL BATTERY COMPONENTS BEING EXPOSED

Hazard Statements

H290	May be corrosive to metals	**H350**	May cause cancer
H302	Harmful if swallowed	**H360**	May damage fertility or the unborn child
H314	Causes severe skin burns and eye damage	**H373**	May cause damage to organs through prolonged or repeated exposure
H318	Causes serious eye damage	**H400**	Very toxic to aquatic life
H331	Toxic if inhaled	**H410**	Very toxic to aquatic life with long lasting effects
H335	May cause respiratory irritation		

IN THE EVENT OF EXPOSURE TO INTERNAL COMPONENTS

Precautionary Statements

Prevention	
P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children
P103	Read carefully and follow all instructions.
P280	Wear protective gloves /protective clothing/ eye protection/ face protection
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P271	Use only outdoors or with adequate ventilation
P273	Avoid release to the environment
Storage	
P403+P233	Store in a well-ventilated place. Keep container tightly closed
P405	Store locked up
Recycle	Refer to section 13
Disposal	
P501	Dispose of contents, container to authorised chemical landfill or if organic, to high temperature incineration

Response	
P301+P316	IF SWALLOWED: get medical help immediately Call a POISON CENTER/ doctor
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352	IF ON SKIN: Wash with plenty of water and soap
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected area with water or shower.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P317	IF exposed or concerned: Get medical help
P333+P317	If skin irritation or rash occurs: Get medical help
P342+P316	If experiencing respiratory symptoms: Get medical help immediately Call a POISON CENTER/ doctor
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage
P391	Collect spillage

Section 3. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient	Identification	Content % weight
Sulphuric Acid <51% (H_2SO_4)	CAS 7664-93-9	10-15%
Lead (Pb)	CAS 7439-92-1	30-40%
Lead Dioxide (PbO_2)	CAS 1309-60-0	30-40%
Inert material :- ABS resin or Polypropylene Borosilicate glass microfiber or Fumed Silica	CAS 9003-56-9 CAS 9003-07-0 CAS 65997-17-3 CAS 7631-86-9	5-8%

Section 4. FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES

Eye contact

If this product comes in contact with the eyes:
- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin contact

If skin contact occurs:
- Immediately flush body and clothes with large amounts of water, using safety shower if available.
- Quickly remove all contaminated clothing, including footwear.
- Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.

Inhalation

If fumes of combustion products are inhaled:
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

Ingestion

For advice, contact a Poisons Information Centre or a doctor at once.
- Urgent hospital treatment is likely to be needed.
- If swallowed do **NOT** induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Transport to hospital or doctor without delay.

MEDICAL ATTENTION AND SPECIAL TREATMENT Indication of any immediate medical attention and special treatment needed

Treat symptomatically. For acute or short term repeated exposures to strong acids:
- Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.

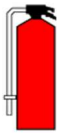
Ingestion:
- Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
- Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful.
- Limit fluids to one or two glasses in an adult.
- Charcoal has no place in acid management.

Skin:
- Skin lesions require copious saline irrigation.
- Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- Deep second-degree burns may benefit from topical silver sulphadiazine.

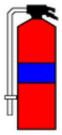
Eye:
- Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjuctival cul-de-sacs. Irrigation should last at least 20-30 minutes. DO NOT use neutralising agents or any other additives. Several litres of saline are required.
- Cyclopaedic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

Section 5. FIRE FIGHTING MEASURES

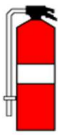
Recommended Extinguishing Media



Water spray or fog. ✓

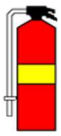


Foam ✓



Dry chemical powder. ✓

Carbon dioxide. ✗



BCF\ Vaporising Liquid (Where regulations permit). ✓

Extinguishing Media Incompatibilities

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

Specific Hazards Hazardous Decomposition

- Non-combustible.
- Not considered to be a significant fire risk.
- Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.
- Heating may cause expansion or decomposition leading to violent rupture of containers.

Fire Incompatibility

- Avoid strong bases.
- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Fire Fighting, Special Protective Equipment & Precautions

- Use water delivered as a fine spray to control fire and cool adjacent area.
- **Do not** approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.

Section 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

- Avoid breathing vapours and contact with skin and eyes.

Environmental Precautions

- Prevent, by any means available, spillage from entering drains or water course.

Methods and materials for containment and cleaning up

- With a clean shovel, transfer spilled material into clean-labelled containers for disposal.
- Wash area down with excess water.
- Do not allow water to enter containers of acid as a violent reaction may occur.
- Prevent from entering drains, sewers, streams or other bodies of water. If contamination of sewers or waterways has occurred, advise the local emergency services

Protective Equipment

- Personal Protective Equipment advice is contained in Section 8 of the SDS.

Emergency Procedures

Minor Spills

- Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.
- Check regularly for spills and leaks.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.

Major Spills

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.

Section 7. HANDLING AND STORAGE

Safe Handling

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Handle gently. Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this SDS.
- Avoid smoking, naked lights, heat or ignition sources.
- Avoid mechanical and thermal shock and friction.
- Use in a well ventilated area.
- Avoid contact with incompatible materials.
- When handling DO NOT eat, drink or smoke.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.

Conditions for Safe Storage Includes Incompatible

- Avoid contact with moisture.
- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- No smoking, naked lights, heat or ignition sources.

Suitable container for Battery contents

- Battery is self-contained but it should be kept in a vertical position to prevent leakage of battery fluid
- **DO NOT** use aluminium or galvanised containers
- All packaging for Class 1 Goods shall be in accordance with the requirements of the relevant Code for the transport of Dangerous Goods.
- Class 1 is unique in that the type of packaging used frequently has a very decisive effect on the hazard and therefore on the assignment to a particular division

Storage incompatibility contents of battery

- Avoid reaction with oxidising agents
- Avoid strong bases.
- Avoid storage with reducing agents.
- Avoid reaction with metals and or water
- Contact with combustible organic matter may cause a fire.
- Avoid contact with finely divided metals.
- Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.
- Inorganic acids are generally soluble in water with the release of hydrogen ions. The resulting solutions have a pH of less than 7.0.
- Inorganic acids neutralise chemical bases (for example: amines and inorganic hydroxides) to form salts - neutralisation can generate dangerously large amounts of heat in small spaces.

✓ = May be stored together ⓘ = May be stored together with specific preventions ✗ = Must not be stored together

FLAMMABLES	EXPLOSIVES	ACUTE TOXIC	OXIDISERS	HARMFUL	IRRITANT	CORROSIVE
✗	✗	✓	✗	✓	✓	✓

Section 8. EXPOSURE CONTROLS , PERSONAL PROTECTION

NEW ZEALAND WORKPLACE EXPOSURE STANDARDS (Occupational Exposure Limits)

Ingredient	Material name	TWA	STEL
Sulphuric Acid (H_2SO_4)	Sulphuric acid	1 mg/m3	3 mg/m3
Lead (PbO)	Lead, inorganic dusts & fumes (as Pb)	0.05 mg/m3	Not Available
Lead dioxide (PbO_2)	Lead dioxide	0.05 mg/m3	Not Available

APPROPRIATE ENGINEERING CONTROLS

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:

- Process controls which involve changing the way a job activity or process is done to reduce the risk.
- Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

PERSONAL PROTECTION

Respirator Type

Not normally required; however if in contact with internal components:-

- Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	E-AUS P2	-	E-PAPR-AUS / Class 1 P2
up to 50 x ES	-	E-AUS / Class 1 P2	-
up to 100 x ES	-	E-2 P2	E-PAPR-2 P2 ^

^ - Full-face
E = Sulfur dioxide(SO2),

Eye Protection

- Safety glasses with side shields.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.

Clothing

- Overalls.

Footwear

- Wear safety footwear or safety gumboots

Glove Type

- Wear Elbow length chemical protective gloves, e.g. PVC.

Other Protection

- PVC protective suit may be required if exposure severe.
- Eyewash unit

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

The battery is a manufactured article containing a clear mobile acidic liquid. The electrolyte mixes with water.

Rectangular plastic casing with exposed terminals for electrical connections. High weight to volume ratio. The hazard of lead acid batteries include:

- CORROSIVE CONTENTS SHORT CIRCUIT - accidental discharge. Current flow by external short circuit may heat metals to welding temperatures with firehazard; Internal heat generated may boil battery acid with evolution of large amounts of highly corrosive acid mist/vapour. Boiling may develop internal pressure and cause explosion with scattering of acid contents.Battery circuits must include electrical fusible links. Terminals and external metal parts must be insulated. Do not clean terminals, battery top with conducting liquids.
- SPILL - damage to casing or overturning may cause corrosive acid contents to spill, causing skin burns on contact. Acid reacts quickly with many metals, generating highly flammable and explosive hydrogen gas; may also weaken metal structures. All lead acid batteries must be vented
- Chemical hazards relate to the contents of the battery. Yellow crystalline; does not mix well with water (1%).
- Soluble in acetone.

Odour	Not Available	**Lower explosive limits**	4.1% hydrogen gas
Odour threshold	Not Available	**Vapour pressure (kPa)**	Not Available
pH	<1 (for acid).	**Vapour density (Air = 1)**	>1
Melting point/ freezing point (°C)	Not Applicable	**Relative density (Water = 1)**	1.2-1.3 (Sulphuric acid electrolyte)
Initial boiling point and boiling range (°C)	95-95.55 °C	**Solubility in water (g,L)**	Miscible (acid)
Flash point	Not Applicable	**Partition coefficient: n-octanol/water**	Not Available
Evaporation rate	<1 BuAC = 1 (for acid)	**Auto-ignition temperature**	Not Available
Flammability	Not Applicable	**Decomposition temperature (°C)**	Not Available
Upper explosive limits	74.2%	**Viscosity**	Not Available

Section 10. STABILITY AND REACTIVITY

Reactivity	See section 7 • Contact with alkaline material liberates heat	**Chemical stability**	• Product is considered stable under normal handling conditions. • Stable under normal storage conditions. • Hazardous polymerization will not occur.
Possibility of hazardous reactions	See section 7	**Conditions to avoid**	See section 7
Incompatible materials	See section 7	**Hazardous decomposition products**	See section 5

Section 11. TOXICOLOGICAL INFORMATION

Inhaled	• Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects. • Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage. There may be dizziness, headache, nausea and weakness.
Ingestion	• Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. • Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident.
Skin contact	• Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue. • Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	• If applied to the eyes, this material causes severe eye damage. • Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns. Mild burns of the epithelia generally recover rapidly and completely
Immediate effects	• As above
Chronic effects	• Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. • Substance accumulation, in the human body, is likely and may cause some concern following repeated or long-term occupational exposure.

- Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

Sulphuric Acid:

- Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyper reactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. Occupational exposures to strong inorganic acid mists of sulphuric acid:

Lead:

WARNING: Lead is a cumulative poison and has the potential to cause abortion and intellectual impairment to unborn children of pregnant workers.

Acute Toxicity	Skin Irritation/ Corrosion	Serious Eye Damage/ Irritation	Respiratory or Skin sensitisation	Mutagenicity	Carcinogenicity	Reproductivity	STOT - Single Exposure	STOT - Repeated Exposure	Aspiration Hazard
✓	✓	✓	ⓘ	ⓘ	✓	✓	✓	✓	ⓘ

✓= Data required to make classification available ✗= Data available but does not fill the criteria for classification
ⓘ= Data Not Available to make classification

Section 12. ECOLOGICAL INFORMATION

Ecotoxicity
- Prevent, by any means available, spillage from entering drains or water courses.
- DO NOT discharge into sewer or waterways.

Degradability
- No Data available for all ingredients

Bio-accumulative Potential
- No Data available for all ingredients

Mobility in Soil
- No Data available for all ingredients

Other Adverse Effects
- No Data available for all ingredients

Section 13. DISPOSAL CONSIDERATIONS

Safe Handling & Disposal
- Dispose in accordance with federal, state or local regulations.

Disposal of Contaminated Packaging
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Treat and neutralise at an approved treatment plant. Treatment should involve: Mixing or slurrying in water; Neutralisation followed by: burial in a land-fill specifically licenced to accept chemical and / or pharmaceutical wastes or Incineration in a licenced apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers.

Environmental Regulations
- Refer to section 15

Section 14. TRANSPORT INFORMATION

UN Number	2800
Proper Shipping Name	BATTERIES, WET, NON-SPILLABLE, electric storage
Transport Hazard Class	Class: 8 **Sub risk:** Not Applicable
Packing group	Not Applicable
Environmental Hazards	No relevant data
Special Precautions	Special provisions 238 Limited quantity 1 L
Additional Information	Marine Pollutant: = Yes
Hazchem Code	2R
Other Information	

Section 15. REGULATORY INFORMATION

SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS, SPECIFIC FOR THE SUBSTANCE OR MIXTURE

This substance is to be managed using the conditions specified in the applicable Group Standard

HSR002491	Additives, Process Chemicals and Raw Materials (Corrosive) Group Standard 2006
HSR002493	Additives, Process Chemicals and Raw Materials (Corrosive, Toxic [6.7]) Group Standard 2006
HSR002504	Additives, Process Chemicals and Raw Materials (Toxic [6.1 + 6.7]) Group Standard 2006
HSR002508	Additives, Process Chemicals and Raw Materials (Toxic [6.1]) Group Standard 2006

Lead (7439-92-1) is found on the following regulatory lists	"International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs",“New Zealand Inventory of Chemicals (NZIoC), New Zealand Workplace Exposure Standards”, New Zealand Hazardous and New Organisms (HSNO) Act – Classification of Chemicals”
Sulphuric Acid CAS 7664-93-9 is found on the following regulatory Lists	"International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs”, “International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft”, “New Zealand Inventory of Chemicals (NZIoC), New Zealand Workplace Exposure Standards”, New Zealand Hazardous and New Organisms (HSNO) Act – Classification of Chemicals”
Location Test Certificate	Subject to Regulation 55 of the Hazardous Substances (Classes 1 to 5 Controls) Regulations, a location test certificate is required when quantity greater than or equal to those indicated below are present
Hazard Class	Not applicable
Quantity beyond which controls apply for closed containers	Not applicable
Quantity beyond which controls apply when use occurring in open containers	Not applicable

Approved Handler

Subject to Regulation 9 of the Hazardous Substances (Classes 6, 8, and 9 Controls) Regulations, the substance must be under the personal control of an Approved Handler when present in a quantity greater than or equal to those indicated below

Class of Substance	**Quantities**
6.1	Any quantity
6.7A	10 kg or more, if solid 10 L or more, if liquid
8.1A	N/A
8.2A	Any quantity
9.1A, 9.2A, 9.3A	Any quantity

Section 16. OTHER RELEVANT INFORMATION

Revision Information

Revision N°	Date	Description
1	08/02/2016	Initial SDS creation
2	14/02/2017	Update material contents
3	03/04/2018	Sect 14: Special provisions 238
4	11/09/19	Revised titles adjusted Exposure limits
ETQ 3	1/08/2024	Reviewed updated to GHS 10e

Abbreviations

CAS #	Chemical Abstract Service Number – *used to uniquely identify chemical compounds*
IARC	International Agency for Research on Cancer
HSNO	Hazardous Substances and New Organisms ((HSNO) Act
LC50	Lethal Concentration- *toxicity of the surrounding medium that will kill half of the sample population of a specific test-animal in a specified period through exposure via inhalation (respiration)*
SDS	Safety Data Sheet- *(SDS), previously called a Material Safety Data Sheet (SDS),*
TGA	Therapeutic Goods Administration