

SDS-02207-NZ-Lead-Acid-Battery-Wet

**SDS-02208-NZ-SDS-Valve-Regulated,-AGM,-Gel
-Non-Spillable-Battery**

SDS-02209-NZ-Battery-Dry-Charged

SDS-02210-NZ-Battery-Fluid-Acid

1. PRODUCT IDENTIFICATION

Product Name	Lead Acid Battery, Wet
Other Names	Batteries, wet, filled with acid, Electric storage, Enhanced flood batteries, Idle-Stop-Start wet batteries
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, forklift operation.

2. HAZARD(S) 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 label before use.
P260	Do not breathe dust / fume / gas / mist / vapours / spray.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment
P280	Wear protective gloves / protective clothing / eye protection / face protection

Response

P301+P312	IF SWALLOWED: Call a POISON CENTER/ doctor/ physician/ first aider/if you feel unwell.
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 skin with water/ 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+P313	IF exposed or concerned: Get medical advice/attention

SAFETY DATA SHEET
**LEAD ACID BATTERY, WET,
 FILLED WITH ACID**

Document	SDS-02207
Rev No.	3
Date	11/09/19
Page	2 of 8

Storage

P405 Store locked up.

Disposal

P501 Dispose of contents, container to authorised chemical landfill or if organic, to high temperature incineration

Recycle

Refer to section 13

P310

Immediately call a POISON CENTER/ doctor/ physician/ first aider

P333+P313

If skin irritation or rash occurs: Get medical advice/attention.

P342+P311

If experiencing respiratory symptoms: Call a POISON CENTER/ doctor/ physician/ first aider

P363

Wash contaminated clothing before reuse.

P390

Absorb spillage to prevent material damage.

P391

Collect spillage.

3. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient	Identification	Content % weight	
Sulphuric Acid <51% (H ₂ SO 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	Polypropylene Polyethylene	CAS 9003-07-0 CAS 9002-88-4	5-8%

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.

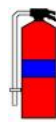
-) DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
 -) Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful.
 -) Limit fluids to one or two glasses in an adult.
 -) Charcoal has no place in acid management.
 -) Some authors suggest the use of lavage within 1 hour of ingestion.
- 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 conjunctival 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).

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

-) Alert Fire Brigade and tell them location and nature of hazard.
-) Wear breathing apparatus plus protective gloves.
-) Prevent, by any means available, spillage from entering drains or water courses.
-) Use fire fighting procedures suitable for surrounding 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.
-) Equipment should be thoroughly decontaminated after use.

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.

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.
- Storage**
-) 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**
-) 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**
-) 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

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

NEW ZEALAND WORKPLACE EXPOSURE STANDARDS (Occupational Exposure Limits)

Ingredient	Material name	TWA	STEL
Sulphuric Acid (H ₂ SO ₄)	Sulphuric acid	1 mg/m ³	3 mg/m ³
Lead (Pb)	Lead, inorganic dusts & fumes (as Pb)	0.05 mg/m ³	Not Available
Lead dioxide (PbO ₂)	Lead dioxide	0.05 mg/m ³	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: Not normally required; however if in contact with internal components:-



Respirator Type

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

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	-	PAPR-P1
up to 50 x ES	Air-line**	P2	PAPR-P2
up to 100 x ES	-	P3	-
100+ x ES	-	Air-line*	-
		Air-line**	PAPR-P3

* Negative pressure demand

** Continuous flow



Eye Protection

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



Glove Type

-) Wear chemical protective gloves, e.g. PVC



Clothing

-) Overalls.



Foot wear

-) Wear safety footwear or safety gumboots e.g. Rubber



Other Protection

-) Eyewash unit.
-) Barrier cream.
-) Skin cleansing cream.

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

Viscosity

Not Available

Evaporation rate

<1 BuAC = 1 (for acid)

Molecular weight (g / mol)

Not Available

Flammability

Not Applicable

Decomposition temperature (°C)

Not Available

Upper, lower flammability or explosive limits

74.2%

Partition coefficient: n-octanol / water

Not Available

10. STABILITY AND REACTIVITY

Reactivity

-) See section 7 and this section under Chemical stability
-) Contact with alkaline material liberates heat
-) Acid Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.

Possibility of hazardous reactions

-) See section 5 & 7
-) 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.

Incompatible materials

-) See section 7

Chemical stability

-) Product is considered stable under normal handling conditions.
-) Stable under normal storage conditions.
-) Hazardous polymerization will not occur.

Hazardous decomposition products

-) See section 5

11. TOXICOLOGICAL INFORMATION ACUTE EFFECTS

No adverse health effects expected if the product is handled in accordance with this safety Data sheet and the product Label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:-

- 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.
- 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. An inorganic compound such as Lead is a cumulative harmful poison when exposed in small amounts can raise the body's content to toxic levels. Prolonged or repeated exposure to lead toxicity effects the nervous system (memory loss, tiredness, headaches, fatigue, irritability, decreased libido, dizziness, depression, encephalopathy (brain damage caused by altered brain function and structure), behavioural effects, altered mood states, disturbances in hand-eye coordination, reaction times, visual motor performance, and mental performance, disturbances to vision, changes in hearing, muscle and joint weakness of the arms and legs, (foot-drop and wrist-drop), heart / blood vessels (reduced haemoglobin synthesis and production, reduced life span and function of red blood cells, anaemia, increased blood pressure), digestive system (loss of appetite, anorexia, with severe abdominal pain, diarrhoea, inflammation of the stomach walls (gastritis) and colic, cramps, nausea, vomiting, constipation, weight loss and decreased urination, deposition of blue lead-line on the gums), kidneys / urinary system (reversible / irreversible kidney damage) and endocrine system. Increased levels of lead result in increased brain damage, coma and death in extreme cases.
- Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.
 - Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.
 - Lead can cross the placenta, and cause miscarriage, stillbirths and birth defects. Exposure before birth can cause mental retardation, behavioural disorders and infant death.
 - Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
 - Ample evidence exists that developmental disorders are directly caused by human exposure to the material.
 - Lead can accumulate in the skeleton for a very long time.

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

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

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 slurring 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	) Dispose in accordance with federal, state or local regulations.) Refer to section 15

14. TRANSPORT INFORMATION

UN Number	2794
Proper Shipping Name	BATTERIES, WET, FILLED WITH ACID, electric storage
Transport Hazard Class	Class: 8 Sub risk: Not Applicable
Packing group	N/A
Environmental Hazards	No relevant data
Special Precautions	Special provisions 295 Limited quantity 1kg
Additional Information	Marine Pollutant: Yes
Hazchem Code	2R



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

Document	SDS-02207
Rev No.	3
Date	11/09/19
Page	8 of 8

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

16. OTHER RELEVANT INFORMATION

Revision Information	Revision No	Date	Description
	1	8/02/2016	Initial SDS creation
	2	14/02/2017	Updated material names
	3	11/09/2019	Added to other names Adjusted exposure limits

Abbreviations	Definition
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 (MSDS),
TGA	Therapeutic Goods Administration

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

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 <i>*LIMITED EVIDENCE</i>
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	<u>Prevention</u>	<u>Response</u>
	P101 If medical advice is needed, have product container or label at hand.	P301+P312 IF SWALLOWED: Call a POISON CENTER/ doctor/ physician/ first aider/if you feel unwell.
	P102 Keep out of reach of children	P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P273 Avoid release to the environment	P302+P352 IF ON SKIN: Wash with plenty of water and soap
	P103 Read label before use.	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
	P280 Wear protective gloves /protective clothing/ eye protection/ face protection	P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.	P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P271 Use only outdoors or in a well-ventilated area.	P308+P313 IF exposed or concerned: Get medical advice/attention
	<u>Storage</u>	P310 Immediately call a POISON CENTER/ doctor/ physician/ first aider
	P403+P233 Store in a well-ventilated place. Keep container tightly closed.	P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
	P405 Store locked up	P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor/ physician/ first aider
	<u>Recycle</u>	P363 Wash contaminated clothing before reuse.
	Refer to section 13	P390 Absorb spillage to prevent material damage.
	<u>Disposal</u>	P391 Collect spillage.
	P501 Dispose of contents, container to authorised chemical landfill or if organic, to high temperature incineration	

3. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient	Identification	Content % weight
Sulphuric Acid <51% (H ₂ SO 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%

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.
 -) Prosthesis 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

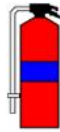
- Treat symptomatically.** For acute or short term repeated exposures to strong acids:
-) Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
 -) Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive 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 conjunctival 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).

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.

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.

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

8. EXPOSURE CONTROLS , PERSONAL PROTECTION

NEW ZEALAND WORKPLACE EXPOSURE STANDARDS (Occupational Exposure Limits)

Ingredient	Material name	TWA	STEL
Sulphuric Acid (H ₂ SO ₄)	Sulphuric acid	1 mg/m ³	3 mg/m ³
Lead (PbO)	Lead, inorganic dusts & fumes (as Pb)	0.05 mg/m ³	Not Available
Lead dioxide (PbO ₂)	Lead dioxide	0.05 mg/m ³	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

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

10. STABILITY AND REACTIVITY

Reactivity	See section 7	Chemical stability	)] Product is considered stable under normal handling conditions.
	)] Contact with alkaline material liberates heat		)] 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

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

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

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 slurring 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

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**



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

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

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 (MSDS),
- TGA** Therapeutic Goods Administration

1. PRODUCT IDENTIFICATION

Product Name	Battery – Dry - Charged
Other Names	Not Applicable
Use	Dry battery - requires addition of sulphuric acid solution before use in 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, etc

2. HAZARDS IDENTIFICATION

Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms (HSNO) legislation. Not regulated as Dangerous Goods for transport purposes.

Signal Word **DANGER**

GHS Classification Oxidizing Solid Category 3, Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 4, Eye Irritation Category 2, 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), 6.1C (oral), 6.8A, 6.9B, 9.1 (fish, crustacean, algal), 9.3C

GHS Label Elements



Harmful



Health Hazard



Environment

IN THE EVENT OF THE INTERNAL BATTERY COMPONENTS BEING EXPOSED

Hazard Statements	H302 Harmful if swallowed	H373 May cause damage to organs through prolonged or repeated exposure
	H319 Causes serious eye irritation	H400 Very toxic to aquatic life
	H360 May damage fertility or the unborn child	H410 Very toxic to aquatic life with long lasting effects

IN THE EVENT OF EXPOSURE TO INTERNAL COMPONENTS

Precautionary Statements	Prevention	Response	
	P101 If medical advice is needed, have product container or label at hand.	P308+P313	IF exposed or concerned: Get medical advice/attention.
	P102 Keep out of reach of children	P330	Rinse mouth.
	P103 Read label before use.	P391	Collect spillage
	P201 Obtain special instructions before use.	P337+P313	IF eye irritation persists: Get medical advice/attention.
	P260 Do not breathe dust / fume / gas / mist / vapours / spray.	P301+P312	IF SWALLOWED: Call a poison center/ doctor/ physician/ first aider, if you feel unwell
	P270 Do not eat, drink or smoke when using this product.	P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing
	P271 Use only outdoors or in a well-ventilated area.	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P273 Avoid release to the environment	Disposal	
	P280 Wear protective gloves / protective clothing / eye protection / face protection	P501	Dispose of contents, container to authorised chemical landfill or if organic, to high temperature incineration
	Storage		
	P403+P233 Store in a well-ventilated place. Keep container tightly closed.		
	P405 Store locked up		

3. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient	Identification	Content % weight
Lead (Pb)	CAS 7439-92-1	30 - 45%
Lead Dioxide (PbO ₂)	CAS 1309-60-0	30 - 45%
Lead monoxide (PbO)	CAS 1309-60-0	3 - 5%
Inert material:- polypropylene, polyethylene	CAS 9003-07-0 CAS 9002-88-4	8%

4. FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES

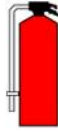
- Eye contact** If this product comes in contact with the eyes:
-) Wash out immediately with fresh running water.
 -) Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
 -) Seek medical attention without delay; if pain persists or recurs seek medical attention.
 -) Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
- Skin contact** If skin contact occurs:
-) Immediately remove all contaminated clothing, including footwear.
 -) Flush skin and hair with running water (and soap if available).
 -) Seek medical attention in event of irritation.
- Inhalation** If fumes or combustion products are inhaled:
-) Remove from contaminated area.
 -) 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.
- Ingestion** **IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.**
-) For advice, contact a Poisons Information Centre or a doctor.
 -) Urgent hospital treatment is likely to be needed.
 -) In the meantime, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
 -) If the services of a medical officer or medical doctor are readily available, the patient should be placed in his / her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.
 -) If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS.
 -) Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
 -) INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
 -) NOTE: Wear a protective glove when inducing vomiting by mechanical means.

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

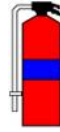
- Treat symptomatically.**
-) Gastric acids solubilise lead and its salts and lead absorption occurs in the small bowel.
 -) Particles of less than 1 um diameter are substantially absorbed by the alveoli following inhalation.
 -) Lead is distributed to the red blood cells and has a half-life of 35 days. It is subsequently redistributed to soft tissue & bone-stores or eliminated. The kidney accounts for 75% of daily lead loss; integumentary and alimentary losses account for the remainder.
 -) Neurasthenic symptoms are the most common symptoms of intoxication. Lead toxicity produces a classic motor neuropathy. Acute encephalopathy appears infrequently in adults. Diazepam is the best drug for seizures.
 -) Whole-blood lead is the best measure of recent exposure; free erythrocyte protoporphyrin (FEP) provides the best screening for chronic exposure. Obvious clinical symptoms occur in adults when whole-blood lead exceeds 80 ug/dL.
 -) British anti-lewisite is an effective antidote and enhances faecal and urinary excretion of lead. The onset of action of BAL is about 30 minutes and most of the chelated metal complex is excreted in 4-6 hours, primarily in the bile. Adverse reaction appears in up to 50% of patients given BAL in doses exceeding 5 mg/kg. CaNa₂EDTA has also been used alone or in concert with BAL as an antidote. D-penicillamine is the usual oral agent for mobilisation of bone lead; its use in the treatment of lead poisoning remains investigational. 2,3-dimercapto-1-propanesulphonic acid (DMPS) and dimercaptosuccinic acid (DMSA) are water soluble analogues of BAL and their effectiveness is undergoing review. As a rule, stop BAL if lead decreases below 50 ug/dL; stop; CaNa₂EDTA if blood lead decreases below 40 ug/dL or urinary lead drops below 2 mg/24hrs..

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 a significant fire risk, however containers may burn.
-) Decomposition may produce toxic fumes of metal oxides which May emit poisonous fumes. May emit corrosive fumes.

Fire Incompatibility

-) None known.

Fire Fighting, Special Protective Equipment & Precautions

-) Alert Fire Brigade and tell them location and nature of hazard.
-) Prevent, by any means available, spillage from entering drains or water course.
-) Wear breathing apparatus plus protective gloves in the event of a fire.
-) Use fire fighting procedures suitable for surrounding area.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

-) Avoid 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.
-) 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

-) 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

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.
-) When handling, DO NOT eat, drink or smoke.
-) Avoid physical damage to containers.
-) Always wash hands with soap and water after handling..

Conditions for Safe Storage Includes Incompatible

-) Store in original containers.
-) Keep containers securely sealed.
-) Store in a cool, dry, well-ventilated area.
-) Store away from incompatible materials and foodstuff containers.
-) Protect containers against physical damage and check regularly for leaks.

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

Lead monoxide -

-) Is a strong oxidiser
-) Reacts explosively with 90% performic acid, rubidium acetylide

-) Reacts violently with strong oxidisers, boron, chlorine, fluorine, dichloromethylsilane, calcium sulfide, ethylene, hydrogen peroxide, hydrogen trisulfide (ignites) hydroxylamine (ignites), lithium carbide, metal acetylides, metal powders when heated (e.g., aluminium, boron, molybdenum, zirconium, sodium, titanium, silicon etc.), perchloric acid, red phosphorus, selenium oxychloride, sodium
-) Is incompatible with aluminium carbide, barium sulfide, silicon, sulphuryl chloride
-) Reacts violently with aluminium, sodium, zirconium, titanium, boron or silicon, when heated
-) Forms impact sensitive explosive mixtures with dichloromethylsilane
-) May attack plastics, coatings and chlorinated rubbers (e.g., Hypalon, Parlon, Rutile,) and fluorinated rubbers such as Viton
-) The state of subdivision may affect the results

✓ = May be stored together

ⓘ = May be stored together with specific precautions

✗ = Must not be stored together



✗

FLAMMABLES



✗

EXPLOSIVES



✓

ACUTE TOXIC



✗

OXIDISERS



✓

HARMFUL



✓

IRRITANT



✓

CORROSIVE

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

AUSTRALIAN EXPOSURE STANDARDS (Occupational Exposure Limits)

Ingredient	Material name	TWA	STEL
Lead (Pb)	Lead, inorganic dusts & fumes (as Pb)	0.05 mg/m3	Not Available
Lead monoxide (PbO)	Lead, inorganic dusts & fumes (as Pb)	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

-) Eyewash unit.
-) Barrier cream.
-) Skin cleansing cream

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	) Automotive starting battery; does not mix with water.	Lower explosive limits	Not Applicable
Odour	Not Available	Vapour pressure (kPa)	Not Applicable
Odour threshold	Not Available	Vapour density (Air = 1)	Not Applicable
pH	Not Applicable	Relative density (Water = 1)	Not Applicable
Melting point/ freezing point (°C)	Not Applicable	Solubility in water (g,L)	Immiscible
Initial boiling point and boiling	Not Available		

range (°C)			
Flash point	Not Applicable	Partition coefficient: n-octanol/water	Not Available
Evaporation rate	Not Available	Auto-ignition temperature	Not Available
Flammability	Not Applicable	Decomposition temperature (°C)	>500-700 °C lead fumes given off
Upper explosive limits	Not Applicable	Viscosity	Not Available

10. STABILITY AND REACTIVITY

IF INTERNAL MATERIALS EXPOSED:- LEAD AND LEAD OXIDE

Reactivity	See section 7 <ul style="list-style-type: none">) Lead oxide:- is a strong oxidiser) Attacks some plastics, rubber and coatings 	Chemical stability	<ul style="list-style-type: none">) Product is considered stable) Hazardous polymerisation will not occur.) Unstable in the presence of incompatible materials.
Possibility of hazardous reactions	See section 5 & 7 <ul style="list-style-type: none">) Reacts violently with strong oxidisers,) Reacts violently with aluminium, sodium, zirconium, titanium, boron or silicon, when heated forms impact sensitive explosive mixtures with dichloromethylsilane 	Conditions to avoid	See section 7
Incompatible materials	See section 7 <ul style="list-style-type: none"> • Is incompatible with aluminium carbide, barium sulphide, silicon, sulphuryl chloride, hydrogen peroxide, chemical active metals, aluminium, combustible materials, lithium carbide, chlorinated rubber, chlorine, boron, hydrides, ethylene, fluorine, sulphides, acetylides and strong reducing agents. 	Hazardous decomposition products	See section 5 <ul style="list-style-type: none"> • Thermal decomposition may produce oxides of lead.

11. TOXICOLOGICAL INFORMATION

IF INTERNAL MATERIALS EXPOSED:- LEAD AND LEAD OXIDE

Inhaled	<ul style="list-style-type: none">) Inhalation of dusts, generated by the material, during the course of normal handling, may be harmful. The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of dusts, or fumes, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.
Ingestion	<ul style="list-style-type: none">) 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.
Skin contact	<ul style="list-style-type: none">) The material is not thought to be a skin irritant (as classified by EC Directives using animal models). Abrasive damage however, may result from prolonged exposures.) Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.) Open cuts, abraded or irritated skin should not be exposed to this material) 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	<ul style="list-style-type: none">) Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result.
Chronic effects	<p><u>Lead:</u></p> <ul style="list-style-type: none">) Substance accumulation, in the human body, is likely and may cause some concern following repeated or long-term occupational exposure.) Ample evidence exists that developmental disorders are directly caused by human exposure to the material.) Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.) Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.

-) Lead, in large amounts, can affect the blood, nervous system, heart, glands, immune system and digestive system. Anaemia may occur.
-) Lead can cross the placenta, and cause miscarriage, stillbirths and birth defects. Exposure before birth can cause mental retardation, behavioural disorders and infant death.
-) Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
-) Lead can accumulate in the skeleton for a very long time. endocrine system. Increased levels of lead result in increased brain damage, coma and death in extreme cases.
-) Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.
-) Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility.
-) Lead can cross the placenta, and cause miscarriage, stillbirths and birth defects. Exposure before birth can cause mental retardation, behavioural disorders and infant death.
-) Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
-) Ample evidence exists that developmental disorders are directly caused by human exposure to the material.
-) Lead can accumulate in the skeleton for a very long time.

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

12. ECOLOGICAL INFORMATION

Toxicity

-) DO NOT discharge into sewer or waterways.
-) Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
-) Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
-) Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

For Lead:

-) Environmental Fate: Lead is assessed as low hazard if it remains in its solid, massive, metallic form. Lead, in the form of alkyls, has been introduced to the environment primarily from leaded gasoline / petrol. These are converted to water-soluble lead compounds of high toxicity and availability to plants.
-) Atmospheric Fate: Lead is primarily an atmospheric pollutant that enters soil and water as fallout, a process determined by the physical form involved and particle size. Lead, in the form of alkyls, has been introduced to the environment primarily from leaded gasoline / petrol. Lead is absorbed by mammals / humans via vapors, contaminated dust, and fumes.
-) Terrestrial Fate: Soil - Lead alkyls easily leach from soil to contaminate water sources close to highways. Plants - Lead alkyls that have been converted to water soluble lead compounds have high toxicity / availability to plants.
-) Aquatic Fate: Lead that has entered the aquatic system is expected to be found in sediments.
-) Ecotoxicity: Soluble or insoluble lead may enter the environment and accumulate. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
-) Soluble or insoluble lead may enter the environment and accumulate.
-) Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
-) 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

13. DISPOSAL CONSIDERATIONS

Disposal of Contaminated Packaging

-) Recycle wherever possible.
-) Consult manufacturer for recycling options.
-) Consult State Land Waste Management Authority for disposal.

Environmental Regulations

-) Refer to section 15

14. TRANSPORT INFORMATION

REGULATED FOR TRANSPORT OF DANGEROUS GOODS ADG

UN Number	Not Applicable	
Proper Shipping Name	Not Applicable	
Transport Hazard Class	Not Applicable	Sub risk: Not Applicable
Packing group	Not Applicable	
Environmental Hazards	No relevant data	
Special Precautions	Special provisions	Not applicable
	Limited quantity	Not Applicable
Additional Information	Marine Pollutant: = Yes	
Hazchem Code	Not Applicable	



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

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"

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

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
6.1D, 6.1C, 6.8A, 6.9B 9.1A, 9.3C Quantities - Any quantity

16. OTHER RELEVANT INFORMATION

Revision Information	Revision N ^o	Date	Description
	1	29/10/15	Initial SDS creation
	2	01/02/2017	Adjusted to lead dioxide; included Inert material
	3	11/09/19	Corrected "other information" error and added other names, Exposure Limits

Abbreviations	CAS #	Chemical Abstract Service Number – used to uniquely identify chemical compounds
	IARC	International Agency for Research on Cancer
	HSNO	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 (MSDS),
	TGA	TGA Therapeutic Goods Administration

PRODUCT IDENTIFICATION

Product Name Battery Fluid, Acid
Other Names Battery Fluid, Sulphuric Acid 1260, Electrolyte, Battery Acid,
Use Electrolyte for lead-acid batteries
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 Electrolyte for lead-acid batteries

HAZARD(S) 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 (Inhalation) Category 2, Skin Corrosion/Irritation Category 1A, Serious Eye Damage Category 1

HSNO Classification 6.1D (inhalation), 6.1E (Oral), 6.7A, 6.9A (Inhalation), 8.1A, 8.2B, 8.3A, 9.1C, 9.1D

GHS Label Elements



Corrosive



Acute toxicity

IN THE EVENT OF EXPOSURE TO BATTERY FLUID, ACID

Hazard Statements	H290 May be corrosive to metals	H330 Fatal if inhaled
	H302 Harmful if swallowed	
	H314 Causes severe skin burns and eye damage	

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 label before use.
P234 Keep only in original container.
P260 Do not breathe dust / fume / gas / mist / vapours / spray.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves / protective clothing / eye protection / face protection

Response

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P390 Absorb spillage to prevent material damage.

Storage

P406 Store in a corrosion resistant container with resistant inner Liner

Disposal

P501 Dispose of contents, container to authorised chemical landfill or if organic, to high temperature incineration

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Recycle

Refer to section 13

COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient	Identification	Content % weight
Sulphuric Acid <51% (H ₂ SO ₄)	CAS 7664-93-9	33-36%
Water	-	64-67%

FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES

- Eye contact**
-) If, Sulphuric acid 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, Sulphuric acid comes in contact with skin or hair:
 -) 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.
 -) Transport to hospital, or doctor.
- Inhalation**
-) If fumes or combustion products are inhaled remove from contaminated area.
 -) Lay patient down. Keep warm and rested.
 -) Prosthesis 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.
 -) Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema.
 -) Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs).
 -) As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested.
 -) Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered.
 -) This must definitely be left to a doctor or person authorised by him/her.
- 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.
 -) Some authors suggest the use of lavage within 1 hour of ingestion.
- 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 conjunctival 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.

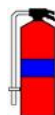
-) Cyclopaedic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
-) Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

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

-) Pollutant
-) Non-combustible liquid
-) Will not burn, but heat produces highly toxic fumes/vapours.
-) Contact with moisture or water may generate heat causing ignition
-) Reacts with metals producing flammable / explosive hydrogen gas
-) If involved in fire, emits toxic fumes of: sulphur oxides (SOx)
-) 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 reaction with oxidising agents, alkalis, reducing agents, common metals and their alloys
-) Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.

Fire Fighting, Special Protective Equipment & Precautions

-) 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.
-) Use fire fighting procedures suitable for surrounding area.

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

-) Slippery when wet.
-) Wear proper protective equipment to prevent skin and eye contact and inhalation of mist.
-) Contain using sand, earth, inert material or vermiculite.
-) Carefully dilute with water (fine spray or fog) then neutralise with lime or soda ash.
-) 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

-) Clean up all spills immediately.
-) Avoid breathing vapours and contact with skin and eyes.
-) Wear fully protective PVC clothing and breathing apparatus.
-) Contain and absorb spill with sand, earth, inert material or vermiculite
-) Place in a suitable, labelled container for waste disposal.

Major Spills

-) Pollutant - contain spillage
-) Clear area of personnel and move upwind
-) Alert Fire Brigade and tell them location and nature of hazard.
-) May be violently or explosively reactive.
-) Wear full body protective clothing with breathing apparatus.
-) Prevent, by any means available, spillage from entering drains or water and water courses.
-) Stop leak if safe to do so.
-) Contain spill with sand, earth or vermiculite.
-) Collect recoverable product into labelled containers for recycling.
-) Neutralise/decontaminate residue (see Section 13 for specific agent).
-) Collect solid residues and seal in labelled drums for disposal.
-) Wash area and prevent runoff into drains.
-) After clean-up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
-) If contamination of drains or waterways occurs, advise emergency services.

HANDLING AND STORAGE

- Safe Handling**
 -) Avoid all personal contact and wear protective clothing when risk of exposure occurs.
 -) DO NOT allow clothing wet with material to stay in contact with skin
 -) Use in a well-ventilated area, avoid generating and breathing mist
 -) Handle and open container with care and keep containers securely sealed when not in use
 -) When handling, DO NOT eat, drink or smoke.
 -) Always wash hands with soap and water after handling. Work clothes should be laundered separately.
 -) Always wash hands with soap and water after handling. Work clothes should be laundered separately.
 -) Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS.
- Storage**
 -) Store in original containers and store in a cool, dry, well-ventilated area away from incompatible materials and foodstuff containers.
 -) Protect containers against physical damage and check regularly for leaks
 -) Floors should be covered or coated with acid resistant material.
 -) DO NOT store in pits, depressions, basements or areas where vapours may be trapped
 -) Attacks some plastics, rubber and coatings
- Suitable container**
 -) Packaging as recommended by manufacturer.
 -) Check that containers are clearly labelled
 -) Glass, Polyethylene, Polypropylene or Poly-lined containers are suitable
- Storage incompatibility**
 -) Is a strong oxidiser
 -) Reacts with water or steam
 -) Reacts violently with many substances including reducing agents, combustible materials, organic substances, alkalis, ammonium tetraperoxychromate, aniline, 1,2-ethanediamine, ethanolamine, isoprene, mesityl oxide, endo-norbanecarboxylic acid ethyl ester, perchlorates, sodium carbonate, zinc chlorate
 -) Reacts, possibly causing ignition or explosion, with many substances, including non-oxidising mineral acids, organic acids, bases, reducing agents, acetic anhydride, acetone cyanohydrin, acetonitrile, acrolein, acrylates, acrylonitrile, alcohols, aldehydes, alkylene oxides, allyl alcohol, allyl chloride, substituted, allyls, 2-aminoethanol, ammonium hydroxide, bromine pentafluoride, n-butylaldehyde, caprolactam solution, carbides, caesium acetylene carbide, chlorine trifluoride, chlorates, chlorosulfonic acid, cresols, cuprous nitride, diisobutylene, ethylene cyanohydrin, ethylene diamine, ethylene glycol, ethyleneimine, fulminates, glycols, hydrochloric acid, iodine heptafluoride, iron, isocyanates, ketones, lithium silicide, mercuric nitride, 2-methylactonitrile, powdered metals, nitric acid, p-nitrotoluene, pentasilver trihydroxydiaminophosphate, perchloric acid, phenols, phosphorus, picrates, potassium chlorate, potassium permanganate, beta-propiolactone, propylene oxide, pyridine, rubidium acetylene, silver permanganate, sodium, sodium chlorate, sodium hydroxide, styrene monomer, zinc phosphide
 -) Increases the explosive sensitivity of nitromethane
 -) Incompatible with 2-amino-5-nitrothiazole, 2-aminothiazole, ammonia, aliphatic amines, alkanolamines, amides, organic anhydrides, isocyanate, vinyl acetate, alkylene oxides, epichlorohydrin.
 -) Attacks some plastics, rubber and coatings
 -) Reacts with metals to produce flammable hydrogen gas

✓ = May be stored together

ⓘ = May be stored together with specific preventions

✗ = Must not be stored together



FLAMMABLES



EXPLOSIVES



ACUTE TOXIC



OXIDISERS



HARMFUL



IRRITANT



CORROSIVE

EXPOSURE CONTROLS, PERSONAL PROTECTION

NEW ZEALAND WORKPLACE EXPOSURE STANDARDS (Occupational Exposure Limits)

Ingredient	Material name	TWA	STEL
Sulphuric Acid (H2SO4)	Sulphuric acid	1 mg/m3	3 mg/m3

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



Respirator Type

When the concentration of gas / particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.
Type E-P Filter of sufficient capacity.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	-	PAPR-P1
up to 50 x ES	Air-line**	P2	PAPR-P2
up to 100 x ES	-	P3	-
		Air-line*	-
100+ x ES	-	Air-line**	PAPR-P3

* Negative pressure demand
** Continuous flow



Eye Protection

Safety glasses with unperforated side shields may be used where continuous eye protection is desirable, as in laboratories;
Spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure.
Chemical goggles whenever there is a danger of the material coming in contact with the eyes; goggles must be properly fitted.
Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available.



Clothing

When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.
Overalls or PVC protective suit may be required if exposure severe.



Glove Type

Wear chemical protective gloves, e.g. PVC



Other Protection

Eyewash unit.
Barrier cream.
Skin cleansing cream.



Foot wear

Wear safety footwear or safety gumboots e.g. Rubber

PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear colourless, mobile liquid that mixes with water.		
Odour	Not Available	Lower explosive limits	Not Available
Odour threshold	Not Available	Vapour pressure (kPa)	13 to 22 mmHg @ 25 °C
pH	<1	Vapour density (Air = 1)	Not Available
Melting point / freezing point (°C)	95 °C / -7 to -70 °C	Relative density (Water = 1)	1.2-1.3 (Sulphuric acid electrolyte) @ 25 °C
Initial boiling point and boiling range (°C)	95 °C (Sulphuric acid electrolyte)	Solubility in water (g,L)	Immiscible
Flash point	Non-flammable	Partition coefficient: n-octanol/water	Not Available
Evaporation rate	Not Available	Auto-ignition temperature	Not Available
Flammability	Not Applicable	Decomposition temperature (°C)	Not Available
Upper, lower flammability or explosive limits	Not Applicable	Viscosity	Not Available

STABILITY AND REACTIVITY

Reactivity	See section 7 and this section under Chemical stability <ul style="list-style-type: none"> Is a strong oxidiser Reacts violently with many substances including reducing agents, combustible materials, organic substances, alkalis Acids often catalyse (increase the rate of) chemical reactions. Inorganic acids are generally soluble in water with the release of hydrogen ions. The resulting solutions have pH of less than 7.0. The dissolution of inorganic acids in water or the dilution of their concentrated solutions with additional water may generate significant heat. The addition of water to inorganic acids often generates sufficient heat in the small region of mixing to cause some of the water to boil explosively. The resulting "bumping" can spatter the acid.
Possibility of hazardous reactions	See section 5 & 7 <ul style="list-style-type: none"> Reacts, possibly causing ignition or explosion, with many substances, including non-oxidising mineral acids, phosphorus, picrates, potassium chlorate, potassium permanganate, beta-propiolactone, propylene oxide, pyridine, rubidium acetylene, silver permanganate, sodium, sodium chlorate, sodium hydroxide, styrene monomer, zinc phosphide Reacts with mild steel, galvanised steel / zinc, active metals, including such structural metals as aluminium and iron, to release hydrogen, a flammable gas. 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. Inorganic acids generate flammable and/or toxic gases in contact with dithiocarbamates, isocyanates, mercaptans, nitrides, nitriles, sulphides, and strong reducing agents. Additional gas-generating reactions occur with sulphites, nitrites, thiosulphates (to give H2S and SO3), dithionites (SO2), and even carbonates. Reacts with cyanide compounds to release gaseous hydrogen cyanide

Incompatible materials	See section 7 <ul style="list-style-type: none">) Avoid heat, sparks, open flame, and other ignition sources) Avoid storage with oxidisers, alkalis, reducing agents, common metals and their alloys) Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous
Chemical stability	<ul style="list-style-type: none">) Unstable in the presence of incompatible materials.) Product is considered stable.) Hazardous polymerisation will not occur) Contact with alkaline material liberates heat
Hazardous decomposition products	<ul style="list-style-type: none">) See section 5) Sulphuric acid may decompose to sulphur trioxide, carbon monoxide, sulphuric acid mist, sulphur dioxide and hydrogen.

TOXICOLOGICAL INFORMATION ACUTE EFFECTS

No adverse health effects expected if the product is handled in accordance with this safety Data sheet and the product Label.

Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:-

Inhaled	Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage. There may be dizziness, headache, nausea and weakness. Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects; these may be fatal. The material can cause respiratory irritation in some persons.
Ingestion	Considered an unlikely route of entry in commercial/industrial environments. 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. The material is considered to be harmful by all exposure routes. The liquid is highly discomforting and corrosive if swallowed. Ingestion may result in nausea, abdominal irritation, pain and vomiting.
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. Skin contact is not thought to produce harmful health effects (as classified under EC Directives using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or irritated skin should not be exposed to this material. Entry into the blood-stream, via, cuts, abrasions or lesions, may produce systemic injury with harmful effects. The liquid is highly discomforting and corrosive to the skin and is capable of causing ulceration and severe burns if exposure is prolonged, even minor exposure is highly discomforting. The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
Eye	This material can cause eye irritation and damage in some persons. 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. The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. Mild burns of the epithelia generally recover rapidly and completely.
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, may occur and may cause some concern following repeated or long-term occupational exposure. Principal routes of exposure are usually by skin contact with the material, eye contact and inhalation of vapour. The material is considered to be harmful by all exposure routes and contact may cause rapid tissue destruction. As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.
Sulphuric Acid (undiluted)	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. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnoea, cough and mucus production.

WARNING: For inhalation exposure ONLY: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS
Occupational exposures to strong inorganic acid mists of sulphuric acid:

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

ECOLOGICAL INFORMATION

Ecotoxicity

-) Prevent, by any means available, spillage from entering drains or water courses.
-) DO NOT discharge into sewer or waterways. DO NOT discharge into sewer or waterways.
-) May cause long term adverse effects in the environment
-) Avoid contaminating waterways. The product is highly acidic. If large spills occurred a water pH drop could be responsible for an environmental effect on aquatic organisms.

Ecotoxicity data for Sulphuric Acid

Mosquito fish	LC50 42mg/L/96hr	Shore crab	LC50 70-80mg/L/48hr
Hooknose fish	LC50 80-90mg/L/48hr	Cockle	LC50 200-500mg/L/48hr

Degradability No Data available for all ingredients

Bio-accumulative Potential No Data available for all ingredients

Mobility in Soil

-) During transport through the soil, sulfuric acid can dissolve some of the soil material, in particular carbonate-based materials

Other Adverse Effects No Data available for all ingredients

DISPOSAL CONSIDERATIONS

Safe Handling & Disposal

-) Dispose in accordance with federal, state or local regulations.

Disposal of Contaminated Packaging

-) Containers may still present a chemical hazard/ danger when empty.
-) Return to supplier for reuse/ recycling if possible.
-) Use soda ash or slaked lime to neutralise

Otherwise:

-) If container cannot be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, and then puncture containers, to prevent re-use, and bury at an authorised landfill.
-) Where possible retain label warnings and SDS and observe all notices pertaining to the product.
-) This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
-) DO NOT allow wash water from cleaning or process equipment to enter drains.
-) It may be necessary to collect all wash water for treatment before disposal.
-) In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
-) Where in doubt contact the responsible authority.
-) 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: Neutralisation with soda-ash or soda-lime 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 with 5% aqueous sodium hydroxide or soda ash, followed by water. Observe all label safeguards until containers are cleaned and destroyed.

Environmental Regulations

-) Dispose in accordance with federal, state or local regulations.
-) Refer to section 15

TRANSPORT INFORMATION

UN Number 2796

Proper Shipping Name Battery fluid, acid or Sulfuric acid with not more than 51 percent acid

Transport Hazard Class Class: 8 **Sub risk:** Not Applicable

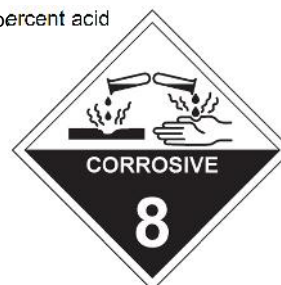
Packing group II

Environmental Hazards No relevant data

Special Precautions Not Applicable
Limited quantity 1L

Additional Information Marine Pollutant: Yes

Hazchem Code 2R



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

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
8.2B	Any quantity
9.1C, 9.2D	Any quantity

OTHER RELEVANT INFORMATION

Revision Information	Revision No	Date	Description
	1	09/02/2016	Initial SDS creation
	2	11/09/2019	Reviewed with minor updates

- 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 (MSDS),
 - TGA** Therapeutic Goods Administration