Safety Data Sheet

According to Regulation (EC) No 1907/2006 (REACH)

Trade name: Dry Charge Battery
MSDS No: 853021
Print date: 08DEC2011 Revision date: 08DEC2011

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product Identifier

1.1.1 Trade name/designation:
Dry Charge Battery

1.2 Relevant identified uses of the substance or mixture and uses advised against

1.2.1 Relevant identified uses:
Power sport batteries

1.2.2 Uses advised against:
Any other not listed above

1.3 Details of the supplier

1.3.1 Supplier:
Yuasa Battery, Inc.

1.3.2 Website
www.yuasabatteries.com

1.3.3 Information contact
2901 Montrose Ave.
Laureldale, PA 19605
United States

1.3.4 National contact
Yuasa Battery Environmental Resources: (610)929-5781

1.4 Emergency Telephone Number

CHEMTREC: **Domestic (800)424-9300**
International: 1(703)527-3887

Section 2: Hazards identification

Material is an article. No health effects are expected related to normal use of this product as sold. Hazardous exposure can occur only when the product is heated, oxidized or otherwise processed or damaged to create lead dust, vapor or fume. Refer to the Material Safety Data Sheet for Lead Acid Battery when battery is filled with electrolyte/battery acid.

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]
Class 13: Non-flammable solids in non-flammable package

2.1.2 Classification according to 67/548/EEC or 1999/45/EC
Xi: Irritating

2.2 Label elements

2.2.1 Labeling according to Regulation (EC) No 1272/2008
Product identifier:
Valve Regulated Lead Battery
Hazard pictograms:

Xi: Irritating

NFPA:

WHMIS:
Not Regulated

Signal word:
CAUTION
Hazard statements:
May be harmful in contact with skin
Causes skin irritation
May cause respiratory irritation
Warning! Contains lead
Precautionary statements:
Keep out of reach of children.
Keep containers tightly closed.
Keep away from heat, sparks, and open flame while charging batteries.

2.3 Other hazards

Adverse human health effects and symptoms:

Inhalation: (Acute): Under normal conditions of use, no health effects are expected.
(Chronic): Repeated and prolonged exposure may cause irritation.

Skin: (Acute): Under normal conditions of use, no health effects are expected.
(Chronic): No data available

Eye: (Acute): Under normal conditions of use, no health effects are expected. Exposure to dust may cause irritation.
(Chronic): No data available.

Ingestion: (Acute): Under normal conditions of use, no health effects are expected. Lead ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping.
(Chronic): No data available

Carcinogenic Effects: Material is an article. No health effects are expected related to normal use of this product as sold. Material does contain components that exhibit carcinogenic effects.

Symptoms of lead toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability. Lead absorption may cause nausea, weight loss, abdominal spasms, and pain in arms, legs and joints.
Effects of chronic lead exposure may include central nervous system (CNS) damage, kidney dysfunction, anemia, neuropathy particularly of the motor nerves with wrist drop, and potential reproductive effects.

Section 3: Composition/information on ingredients

3.1 Description of the mixture:

CAS No	EC No	% [weight]	Name	WHMIS Classifications	Classification according to CLP (1272/2008)
7439-92-1	231-100-4	89-92%	Lead	D2A	Xn, N, T; R20/22, R33, R50, R50/53, R53, R61, R62; Repr. Cat. 1, Repr. Cat. 3; S53, S45, S60, S61 except those specified elsewhere in the annex
7440-36-0	231-146-5	0.2%	Antimony	Uncontrolled product according to WHMIS classification criteria; D1B(powder)	Xn, N; R20/22, R51/53; S2, S61 except tetroxide, pentoxide, trisulphide, pentasulphide, and those specified elsewhere in the annex
7440-31-5	231-141-8	0.006%	Tin	Uncontrolled product according to WHMIS classification criteria	Not Listed
7440-38-2	231-148-6	0.003%	Arsenic	D1A, D2A	T, N; R23/25, R50/53; S1/2, S20/21, S28, S45, S60, S61
7440-70-2	231-179-5	0.002%	Calcium	B6, E	F; R15; S2, S8, S24/25, S43

Case material composes 5-6% of the article. Case material includes the following components: 1-Propene, homopolymer (9003-07-0); Polystyrene (9003-53-6); Acrylonitrile, polymer with styrene (9003-54-7); Acrylonitrile, polymer with 1,3-butadiene and styrene (9003-56-9); Styrene polymer with 1,3-butadiene and styrene (9003-56-9); Styrene polymer with 1,3-butadine (Kraton) (9003-55-8); Ethylene, chloro-, polymer (9003-86-2); Hard Rubber; Polycarbonate; Polyethylene.

Section 4: First Aid Measures

4.1 Description of first aid measures

4.1.1 Eye contact:
First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If contact with material occurs flush eyes with water. If signs/symptoms develop, get medical attention.

4.1.2 Inhalation:
First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If signs/symptoms develop, move person to fresh air.

4.1.3 Skin contact:
First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. Wash skin with soap and water. If signs/symptoms develop, get medical attention.

4.1.4 Ingestion:
First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If ingested consult physician immediately.

4.1.5 Self-protection of the first aider:
If artificial respiration is required use a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Section 5: Firefighting measures

5.1 Extinguishing media:

5.1.1 Suitable extinguishing media:
CO2, dry chemical or foam

5.1.2 Unsuitable extinguishing media:
Avoid using water

5.2 Special hazards arising from the substance or mixture

5.2.1 Hazardous combustion products:
Lead portion of battery will likely produce toxic metal fume, vapor or dust.

5.3 Advice for fire-fighters:
Keep sparks or other sources of ignition away from batteries. Do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries.
Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

5.4 Additional information:
Material itself is non-combustible although in fire situations will likely produce toxic metal fume, vapor or dust.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
No special precautions expected to be necessary if material is used under ordinary conditions and as recommended. Avoid contact of lead with skin.

6.1.1 For non-emergency personnel
Protective equipment:
Wear chemical gloves

6.1.2 For emergency responders
No emergency procedures are expected to be necessary if material is used under ordinary conditions as recommended. Use normal clean up procedures.
Personal protective equipment:
Wear chemical gloves, goggles, acid resistant clothing and boots, respirator if insufficient ventilation.

6.2 Environmental precautions:
Prevent entry into waterways, sewers, basements or confined areas. Runoff from fire control and dilution water may be toxic and corrosive and may cause adverse environmental impacts.

6.3 Methods and material for containment and cleaning up

6.3.1 For containment:
Lead dust should be vacuumed or wet swept into a D.O.T. approved container. Use controls that minimize fugitive emissions. Do not use compressed air.

6.3.2 For cleaning up:
Contact local and/or state officials for proper disposal requirements.

Section 7: Handling and storage

Precautions for safe handling

7.1.1 Protective measures:
Handle batteries cautiously. Do not tip to avoid spills (if filled with electrolyte). Avoid contact with internal components. Wear protective clothing when filling or handling batteries. Follow manufacturer's instructions for installation and service. Do not allow conductive material to touch the battery terminals. Short circuit may occur and cause battery failure and fire.

7.1.2 Advice on general occupational hygiene
Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Eyewash stations and safety showers should be provided with unlimited water supply. Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities
Avoid contact with strong bases, acids, combustible organic materials, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, reducing agents and water.
Technical measures and storage conditions:
Store in a cool/low-temperature, well-ventilated place away from heat and ignition sources. Batteries should be stored under roof for protection against adverse weather conditions. Place cardboard between layers of stacked batteries to avoid damage and short circuits. Store batteries on an impervious surface.
Storage class:
Class 13: Non-flammable solids in non-flammable package

Section 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Occupational exposure limits:

Limit value type (country of origin)	Substance name	EC-No.	CAS-No	Limit value	Monitoring and observation processes
TWA(ACGIH USA) STEL (CA-ON) TWA (CA-ON) TWA (CA-QU) STEL (CH) TWA (CH) TWA (FI) Biological Limit Value (FI) TWA (ME) Ceiling (NIOSH)	Arsenic		7440-38-2	0.01 mg/m3 50 µg/m3 10 µg/m3 0.1 mg/m3 0.02 mg/m3 0.01 mg/m3 0.01 mg/m3 70 nmol/L 0.01 mg/m3 0.002 mg/m3	Designated substance regulation Medium: Urine Time: end of shift at end of workweek
TWA(ACGIH USA) TWA (CA) TWA (FI) STEL(ME) TWA (ME) TWA (NIOSH USA)	Tin	231-141-8	7440-31-5	2 mg/m3 2 mg/m3 2 mg/m3 4 mg/m3 2 mg/m3 2 mg/m3	
STEL (CH) TWA (CH) TWA (ACGIH USA) TWA (CA)	Antimony	231-146-5	7440-36-0	1.5 mg/m3 0.5 mg/m3 0.5 mg/m3 0.5 mg/m3	

TWA (FI) TWA (JP) TWA(ME) TWA(NIOSH USA) TWA (OSHA USA)				0.5 mg/m3 0.1 mg/m3 0.5 mg/m3 0.5 mg/m3 0.5 mg/m3	
TWA (ACGIH) TWA(CA ON) TWA(CA QU) STEL(CH) TWA(CH) TWA(FI) Biological Limit Value (FI) TWA(JP) TWA(ME) TWA(NIOSH) TWA(OSHA)	Lead	231-100-4	7439-92-1	0.05 mg/m3 0.05 mg/m3 0.05 mg/m3 0.15 (0.09) mg/m3 0.05(0.03)mg/m3 0.1 mg/m3 1.4 umol/L 0.1 mg/m3 0.15 mg/m3 0.05 mg/m3 50 ug/m3	Designated substance regulation Dust (fume) Dust (fume) Dust As Pb, dust and fume

8.2 Exposure controls

8.2.1 Appropriate engineering controls:
Store and charge in a well-ventilated area. General dilution ventilation is acceptable.

8.2.2 Personal protective equipment:

8.2.2.1 Pictograms:

8.2.2.2 Eye/Face protection:
Wear protective eyewear (goggles, face shield or safety glasses with side shields).

8.2.2.3 Skin protection:
Wear appropriate gloves.
No skin protection is ordinarily required under normal conditions of use. In accordance with industrial hygiene practices, if contact with leaking battery is expected precautions should be taken to avoid skin contact. Under severe exposure or emergency conditions, wear acid-resistant clothing and boots.

8.2.2.4 Respiratory protection:
In case of insufficient ventilation, wear suitable respiratory equipment.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

9.1.1 Appearance
Physical state: Solid Color: Bluish gray metal Odor: Odorless Odor threshold: No Data

9.1.2 Safety relevant basic data
pH (20 ˚C): No Data
Melting point/range(˚C): 252.2222-360
Initial boiling point/range (˚C): 1380
Decomposition temperature (˚C): No Data
Flash point (˚C): No Data
Ignition temperature (˚C): No Data

Vapor pressure (hPa): No Data
Vapor density (air = 1): No Data
Density (g/cm3): 599.3267-705.4575 lbs/ft^3
Bulk density (kg/m3): No Data
Specific Gravity/Relative Density (Water=1): 9.6-11.3
Water solubility (20˚C in g/l): No Data
Solubility(ies): No Data
Partition coefficient: No Data
N-Octanol/Water (log Po/w): No Data
Viscosity, dynamic (mPa s): No Data

9.2 Other safety information:
Properties of explosive atmospheres (mixtures):
Gases and vapors: No Data
Dusts: No Data
Physical chemical properties of nanoparticles: No Data
Limiting oxygen concentration: No Data
Bulk density: No Data
Solubility in different media: No Data
Stability in organic solvents and identity of relevant degradation products: No Data
Evaporation rate: No Data
Conductivity: No Data
Surface tension: No Data
Dissociation constant in water (pKa): No Data
Oxidation-reduction Potential: No Data
Fat solubility (solvent – oil to be specified): No Data
Critical temperature: No Data

Section 10: Stability and reactivity

10.1 Reactivity:
Not reactive

10.2 Chemical stability:
Stable under normal temperatures and pressures

10.3 Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4 Conditions to avoid:
Prolonged overcharge, sources of ignition.

10.5 Incompatible materials:
Avoid contact with strong bases, acids, combustible organic materials, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, reducing agents and water.

10.6 Hazardous decomposition products:
Lead compounds exposed to high temperatures will likely produce toxic metal fume, vapor or dust; contact with strong acid/base or presence of nascent hydrogen may generate highly toxic arsine gas.

Section 11: Toxicological Information

11.1 Information on toxicological effects:

Lead (7439-92-1)	Effect dose / Concentration	Species	Method	Time
Acute oral toxicity	155 mg/kg	Human	LDLo	
Acute oral toxicity	1050 ug/kg	Rat	TDLo	30 Weeks(int.)
Acute inhalative toxicity (dust/mist)	0.011 mg/m3	Human	LCLo	26 Weeks (int.)
Mutagen	23 ug/m3	Rat	Inhalation	16 Weeks
Reproductive	790 mg/kg	Rat	TDLo (Oral)	
Reproductive	3 mg/m3	Rat	TCLo (Inhalation)	1-21 Days preg.
Antimony (7440-36-0)	Effect dose / Concentration	Species	Method	Time
Acute oral toxicity	100 mg/kg	Rat	LD50	
Acute inhalative toxicity (dust/mist)	13.5 mg/m3	Human	LCLo	4 Hours
Tumorigen/Carcinogen	50 mg/m3	Rat	TCLo	7 hours 52 weeks (int.)
Arsenic (7440-38-2)	Effect dose / Concentration	Species	Method	Time
Acute oral toxicity	763 mg/kg	Rat	LD50	
Acute oral toxicity	5 mg/kg	Rat	LDLo	
Mutagen	0.211 mg/L	Human	Oral	15 Years
Reproductive	605 ug/kg	Rat	TDLo	35 weeks preg.

11.2 Other information:

11.2.1 Carcinogenic Effects:

Material is an article. No health effects are expected related to normal use of this product as sold. Material does contain components that exhibit carcinogenic effects.

Carcinogenic Effects			
	CAS	IARC	NTP
Lead	7439-92-1	Group 2A–Probable Carcinogen	Reasonably anticipated to be human carcinogen

11.2.2 Routes of exposure:

11.2.2.1 In case of ingestion:

Acute (Immediate): Under normal conditions of use, no health effects are expected. Lead ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping.

Chronic (Delayed): No data available

11.2.2.2 In case of skin contact:

Acute (Immediate): Under normal conditions of use, no health effects are expected.

Chronic (Delayed): No data available

11.2.2.3 In case of inhalation:

Acute (Immediate): Under normal conditions of use, no health effects are expected. Contents of an open battery can cause respiratory irritation.

Chronic (Delayed): Repeated and prolonged exposure may cause irritation.

11.2.2.4 In case of eye contact:

Acute (Immediate): Under normal conditions of use, no health effects are expected. Exposure to dust may cause irritation.

Chronic (Delayed): No data available

Section 12: Ecological information

12.1 Toxicity:
Aquatic toxicity
12.1.1 Substances
Acute (short-term) toxicity: No Data

Effect dose	Exposure time	Species	Method	Evaluation	Remark

Persistence/Degradability: Lead is persistent in soils and sediments.

Section 13: Disposal considerations

13.1 Waste treatment methods
13.1.1 Product/packaging disposal:
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
13.1.2 Waste codes/waste designations according to EWC/AVV:
16 06 05
13.2 Additional information:
Any waste marked with an asterisk (*) is considered as a hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

Section 14: Transport Information

The transportation of dry batteries is Not Regulated
14.1 Land transport (CFR 49: DOT)
This product is not hazardous as defined by 49CFR 172.101 by the U.S. Department of Transportation
UN-No:
Proper shipping name:
Class(es):
Packing group:
Hazard label(s):
Special provision(s)/Exceptions:

14.2 Land transport (ADR/RID/GGVSEB):
This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.
UN-No:
Proper shipping name:
Class(es):
Classification Code:
Packing group:
Hazard label(s):
Special provision(s):

Land transport (TDG):
This product is not classified as dangerous goods by the TDG standards
UN-No:
Proper shipping name:
Class(es):
Packing group:
Hazard label(s):
Special provision(s):

14.3 Sea transport (IMDG-Code/GGVSee):
This product is not classified as dangerous goods by the IMO
UN No:
Proper shipping name:
Class(es):
Packing group:
Marine Pollutant:
Special provision(s):

14.4 Air transport (ICAO-IATA/DGR):
This product is not classified as dangerous goods by the International Air Transport Association (IATA) or the ICAO.
UN No:
Proper shipping name:
Class(es):
Packing group:
Special provision(s):

Section 15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the mixture
15.1.1 National regulations(Canada):
WHMIS Classification:
This product does not meet the classification criteria of the Controlled Products Regulations.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Controlled Products Regulations.
Canada DSL:
The following substances are listed on the Canadian DSL:
Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)
Canada NDSL:
None of the components on this SDS are listed on the Canadian NDSL:
WHMIS:
Ingredient Disclosure List

Substance	CAS No.	Wt %	Disclosure Limit %
Calcium	7440-70-2	0.002%	Not Listed
Lead	7439-92-1	89-92%	0.1%
Lead as Lead compounds		89-92%	Not Listed
Lead as Lead, inorganic compounds		89-92%	1%
Tin	7440-31-5	0.006%	1%
Antimony	7440-36-0	0.2 %	1%

Antimony as Antimony compounds		0.2%	1%
Arsenic	7440-38-2	0.003%	0.1%

CEPA:

Priority Substances List

Substance	CAS No.	Wt %	Status
Calcium	7440-70-2	0.002%	Not Listed
Lead	7439-92-1	89-92%	Not Listed
Lead as Lead compounds		89-92%	Not Listed
Lead as Lead, inorganic compounds		89-92%	Not Listed
Tin	7440-31-5	0.006%	Not Listed
Antimony	7440-36-0	0.2 %	Not Listed
Antimony as Antimony compounds		0.2%	Not Listed
Arsenic	7440-38-2	0.003%	Not Listed

15.1.2 National regulations(China):
The following components are listed on the Inventory list for China:
Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)

15.1.3 National regulations(European Union):
Classification:
Xi
Risk Phrases:
R36, R38
Safety Phrases:
S1/2, S26, S30, S45
The following components are listed on the EU EINECS:
Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)
None of the above mentioned components are listed on the EU ELNICS.

CLP (1272/2008) Concentration Limits

Substance	CAS	WT %	Concentration Limit
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Not Listed
Lead as Lead compounds		89-92	2.5%<=C: Repr. Cat. 3; R62 1%<=C: Xn; R20/22 0.5%<=C: R33
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	0.25%<=C: Xn; R20/22
Arsenic	7440-38-2	0.003	Not Listed

Substance	CAS	WT %	Substances and Preparations
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Not Listed
Lead as Lead compounds		89-92	A, E, 1(except those specified elsewhere in the annex)
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	A, 1 (except tetroxide, pentoxide, trisulphide, pentasulphide and those specified elsewhere in the annex)
Arsenic	7440-38-2	0.003	Not Listed

Germany
Lead Restrictions:

Lead concentration in the blood above 300 µg/L in male employees and 100 µg/L in female employees requires additional training for personal hygiene and vigilance. Lead concentration in the blood above 350 µg/L in male employees and 200 µg/L in female employees requires additional training for personal hygiene and vigilance; Lead concentration in the blood above 400 µg/L in male employees and 300 µg/L in female employees requires additional training for personal hygiene and vigilance; See TRGS 505 for detailed regulations regarding lead and lead compounds.
Employment restrictions for employees below the age of 18 years; Employment restrictions for pregnant or breastfeeding women; Prohibited for use at home based workplaces; Restrictions apply for use of lead compounds in packaging material, drinking water systems, cars, electrical and electronical devices; See TRGS 505 for detailed regulations regarding lead and lead compounds.

Emission Limits for Inorganic Dusts

Substance	CAS	WT %	Emission Limit
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	2.5 g/h Mass flow (class II); 0.5 mg/m3 mass concentration (Class II)
Lead as Lead compounds		89-92	2.5 m/h Mass flow (Class II, as Pb); 0.5 mg/m3 Mass concentration (Class II, as Pb)
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	5 g/h Mass flow (Class III); 1 mg/m3 Mass concentration (Class III)
Antimony	7440-36-0	0.2	5 g/h Mass flow (Class III); 1 mg/m3 Mass concentration (Class III)
Antimony as Antimony compounds		0.2	5 g/h Mass flow (Class III, as Sb); 1 mg/m3 Mass concentration (Class III, as Sb)
Arsenic	7440-38-2	0.003	Not Listed

15.1.4 National regulations(Japan):
The following chemicals are on the Japanese ENCS:

Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)

ISHL Harmful substances whose names are to be indicated on the label

Substance	CAS	WT %	Limit
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	0.1% weight
Lead as Lead compounds		89-92	0.1% weight
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	0.1% weight

ISHL Prevention of Lead Poisoning

Substance	CAS	WT %	Status
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Not Listed
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	Not Listed

ISHL Notifiable Substances

Substance	CAS	WT %	Limit
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	0.1% weight
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	0.1% weight
Tin	7440-31-5	0.006	0.1% weight
Antimony	7440-36-0	0.2	0.1% weight
Antimony as Antimony compounds		0.2	0.1% weight
Arsenic	7440-38-2	0.003	0.1%weight

Air Pollution Control Law: Emission Standards for Air Pollutants

Substance	CAS	WT %	Emission Limit
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	16-20 mg/Nm3
Lead as Lead compounds		89-92	16-20 mg/Nm3
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	Not Listed

Pollutant Release Transfer Register (PRTR): Class 1 Substances

Substance	CAS	WT %	Status
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	304
Lead as Lead compounds		89-92	305 (Designated class 1 substance)
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	31
Antimony as Antimony compounds		0.2	31
Arsenic	7440-38-2	0.003	332 (Designated class 1 substance)

ISHL Working Environment Evaluation Standards: Administrative Control Levels

Substance	CAS	WT %	Limit
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	0.05 mg/m3 ACL
Lead as Lead compounds		89-92	0.05 mg/m3 ACL (as Pb)
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	0.003 mg/m3 ACL

15.1.5 National regulations(Korea):
The following substances are listed on the Korean KECL:
Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)

15.1.6 National regulations(Mexico):
Pollutant Release and Transfer Register: Reporting Emissions

Substance	CAS	WT %	Threshold Quantities
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Not Listed
Lead as Lead compounds		89-92	1 kg/yr TQ
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	1 kg/yr TQ

15.1.7 National regulations(United States):

The following substances are on the MA, NJ, and PA Right To Know Lists:

Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)

The following substances are on the TSCA inventory:

Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)

OSHA: Specifically Regulated Chemicals

Substance	CAS	WT %	Limit
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	30 µg/m3 Action Level (Poison, See 29 CFR 1910.1025); 50 µg/m3 TWA
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	30 µg/m3 Action Level (Poison, See 29 CFR 1910.1025, as Pb); 50 µg/m3 TWA (as Pb)
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	Not Listed

CAA: 1990 Hazardous Air Pollutants

Substance	CAS	WT %	Limit
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Not Listed
Lead as Lead compounds		89-92	(includes any unique chemical substance that contains Lead as part of its infrastructure)
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	(includes any unique chemical substance that contains Antimony as part of its infrastructure)
Arsenic	7440-38-2	0.003	Not Listed

CERCLA/SARA

Hazardous Substances and Their Reportable Quantities

Substance	CAS	WT %	Reportable Quantity
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 4.54 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed

Antimony	7440-36-0	0.2	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	1 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 0.454 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)

Section 302 Extremely Hazardous Substances EPCRA RQs

Substance	CAS	WT %	Reportable Quantity
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Not Listed
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	Not Listed

Section 302 Extremely Hazardous Substances TPQs

Substance	CAS	WT %	Threshold Planning Quantity
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Not Listed
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	Not Listed

RCRA

Basis for Listing: Appendix VII

Substance	CAS	WT %	Basis
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Included in waste streams: F035, F037, F038, F039, K002, K003, K005, K046, K048, K049, K051, K052, K061, K062, K064, K065, K066, K069, K086, K100, K176
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Included in waste streams: F039, K021, K161, K177
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	Included in waste streams: F032, F034, F035, F039, K031, K060, K084, K101, K102, K161, K171, K172, K176

D Series Wastes: Max Concentration of Contaminants for the Toxic Characteristic

Substance	CAS	WT %	Regulatory Level
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	5.0 mg/L
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	5.0 mg/L

Hazardous Constituents: Appendix VIII to 40 CFR 261

Substance	CAS	WT %	Status
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Hazardous constituent – no waste number
Lead as Lead compounds		89-92	Hazardous constituent – no waste number
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Hazardous constituent – no waste number
Antimony as Antimony compounds		0.2	Hazardous constituent – no waste number
Arsenic	7440-38-2	0.003	Hazardous constituent – no waste number

California: California Proposition 65

Substance	CAS	WT %	Status
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Carcinogen(initial date 10/1/92); developmental toxicity(initial date 2/27/87); 0.5 µg/day(Maximum Allowable Dose Level); 15 µg/day oral(No Significant Risk Level); female reproductive toxicity(initial date 2/27/87); male reproductive toxicity(initial date 2/27/87)
Lead as Lead compounds		89-92	Carcinogen(initial date 10/1/92)
Lead as Lead, inorganic compounds		89-92	Developmental toxicity(initial date 2/27/87)
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	0.06µg/day inhalation(No Significant Risk Level); 10µg/day except inhalation(No Significant Risk Level)

Pennsylvania
Environmental Hazard list

Substance	CAS	WT %	Regulatory Level
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	
Lead as Lead compounds		89-92	
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	
Antimony as Antimony compounds		0.2	
Arsenic	7440-38-2	0.003	

Special hazardous Substances

Substance	CAS	WT %	Regulatory Level
Calcium	7440-70-2	0.002	Not Listed
Lead	7439-92-1	89-92	Not Listed
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Not Listed
Antimony	7440-36-0	0.2	Not Listed
Antimony as Antimony compounds		0.2	Not Listed
Arsenic	7440-38-2	0.003	

Rhode Island: Hazardous Substances List

Substance	CAS	WT %	Regulatory Level
Calcium	7440-70-2	0.002	Flammable
Lead	7439-92-1	89-92	Toxic (dust and fume)
Lead as Lead compounds		89-92	Not Listed
Lead as Lead, inorganic compounds		89-92	Not Listed
Tin	7440-31-5	0.006	Toxic
Antimony	7440-36-0	0.2	Toxic
Antimony as Antimony compounds		0.2	Toxic
Arsenic	7440-38-2	0.003	Toxic; Carcinogen

Section 16: Other Information

16.1 Relevant R-, H- and EUH-phrases (number and full text):

Hazard Abbreviations:

Xi: Irritant
Xn: Harmful
N: Dangerous for the environment
T: Toxic
F: Highly Flammable

Risk Phrases:

R15: Contact with water liberates extremely flammable gases
R20/22: Harmful by inhalation and if swallowed
R23/25: Toxic by inhalation and if swallowed
R33: Danger of cumulative effects
R36: Irritating to eyes
R38: Irritating to skin
R50: Very toxic to aquatic organisms
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R53: May cause long-term adverse effects in the aquatic environment
R61: May cause harm to the unborn child
R62: Possible risk of impaired fertility

Safety Phrases:

S1/2: Keep locked up and out of the reach of children
S2: Keep out of the reach of children
S8: Keep container dry
S20/21: When using do not eat, drink, or smoke
S24/25: Avoid contact with skin and eyes
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S28: After contact with skin, wash immediately with plenty of water

S30: Never add water to this product
S43: In case of fire use CO2, dry chemical, or foam. Never use water
S45: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)
S53: Avoid exposure – obtain special instructions before use
S60: This material and its container must be disposed of as hazardous waste
S61: Avoid release to the environment. Refer to special instructions/safety data sheet

Hazard statements:
H313: May be harmful in contact with skin
H315: Causes skin irritation
H335: May cause respiratory irritation
EUH201A: Warning! Contains lead

Precautionary statements:
P102: Keep out of reach of children.
P233: Keep containers tightly closed.
P210: Keep away from heat, sparks, and open flame while charging batteries.

16.2 Further information:

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Yuasa, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Yuasa, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

Safety Data Sheet

According to Regulation (EC) No 1907/2006 (REACH)

Trade name: Battery Electrolyte
MSDS No. 853022
Print date: 08DEC2011 Revision date: 08DEC2011

Section 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product Identifier

1.1.1 Trade name/designation:
Battery Electrolyte

1.2 Relevant identified uses of the substance or mixture and uses advised against

1.2.1 Relevant identified uses:
Used to activate dry batteries

1.2.2 Uses advised against:
Any other not listed above

1.3 Details of the supplier

1.3.1 Supplier:
Yuasa Battery, Inc.

1.3.2 Website
www.yuasabatteries.com

1.3.3 Information contact
2901 Montrose Ave.
Laureldale, PA 19605
United States

1.3.4 National contact
Yuasa Battery Environmental Resources: (610)929-5781

1.4 Emergency Telephone Number

CHEMTREC: **Domestic (800)424-9300**
International: 1(703)527-3887

Section 2: Hazards identification

2.1 Classification of the substance or mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]
8B: Non flammable corrosive materials

2.1.2 Classification according to 67/548/EEC or 1999/45/EC
Xi: Irritating
C: Corrosive

2.2 Label elements

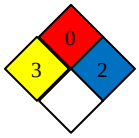
2.2.1 Labeling according to Regulation (EC) No 1272/2008
Product identifier:
Valve Regulated Lead Battery
Hazard pictograms:


Xn: Harmful


Xi: Irritating


C: Corrosive

NFPA:



WHMIS:

Class E: Corrosive materials

Signal word:
DANGER
Hazard statements:
Causes severe skin burns and eye damage
Causes skin irritation
May cause respiratory irritation
Precautionary statements:
Keep out of reach of children.
Keep containers tightly closed.
Keep away from heat, sparks, and open flame while charging batteries.

2.3 Other hazards

Adverse human health effects and symptoms:

Inhalation: (Acute): May cause corrosive burns – irreversible damage.
(Chronic): Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.

Skin: (Acute): Causes severe skin burns and eye damage.
(Chronic): Repeated or prolonged exposure to corrosive materials will cause dermatitis.

Eye: (Acute): Causes serious eye damage.
(Chronic): Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

Ingestion: (Acute): May cause irreversible damage to mucous membranes.
(Chronic): Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal disturbances.

Routes of Entry:
Inhalation, Skin, Eye, Ingestion/Oral
Medical conditions aggravated by exposure:
Lungs, Skin

Acute exposure to sulfuric acid causes severe irritation, burns and permanent tissue damage to all routes of exposure.
Chronic exposure to sulfuric acid may cause erosion of tooth enamel, inflammation of nose, throat and respiratory system.

Section 3: Composition/information on ingredients

3.1 Description of the mixture:

CAS No	EC No	% [weight]	Name	WHMIS Classifications	Classification according to CLP (1272/2008)
7664-93-9	231-639-5	30-40%	Sulfuric Acid	D1A, E(including >51%, <=51%)	C; R35; S1/2, S26, S30, S45
7732-18-5	231-791-2	60-70%	Water	Uncontrolled product according to WHMIS classification criteria.	Not Listed

Under United States Regulations (29 CFR 1900.1200 – Hazard Communication standard), this product is considered hazardous. In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS). According to the Globally Harmonized Standard for Classification and Labeling (GHS) this product is considered hazardous.

Section 4: First Aid Measures

4.1 Description of first aid measures

4.1.1 Eye contact:
Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.

4.1.2 Inhalation:
Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Do not use mouth – to – mouth method if victim inhaled the substance.

4.1.3 Skin contact:
For minor skin contact, avoid spreading material on unaffected skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing and shoes.

4.1.4 Ingestion:
Give plenty of water to drink. Do NOT induce vomiting. Obtain medical attention immediately if ingested.

4.1.5 Self-protection of the first aider:
If artificial respiration is required use a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Section 5: Firefighting measures

5.1 Extinguishing media:

5.1.1 Suitable extinguishing media:
Small Fires: Dry chemical, CO2 or water spray
Large Fires: Dry chemical, CO2, alcohol – resistant foam or water spray.

5.1.2 Unsuitable extinguishing media:
Any not listed above

5.2 Special hazards arising from the substance or mixture

5.2.1 Hazardous combustion products:
Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive fumes.

5.3 Advice for fire-fighters:
Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible. Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
Keep out of low areas.
Keep unauthorized personnel away
Stay upwind.

5.4 Additional information:
Reacts violently with metals, nitrates, chlorates, carbides and other organic materials. Reacts with most metals to yield explosive flammable hydrogen gas.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Ventilate enclosed areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

6.1.1 For non-emergency personnel
Protective equipment:
Wear chemical gloves

6.1.2 For emergency responders
ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area) as an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Do not get water inside container.
Personal protective equipment:
Wear chemical gloves, goggles, acid resistant clothing and boots, respirator if insufficient ventilation.

6.2 Environmental precautions:
Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

6.3.1 For containment:
Stop leak if you can do it without risk. Absorb with earth sand or other non-combustible material. Do not allow discharge of unneutralized acid to sewer. Cautiously neutralize spilled liquid.

6.3.2 For cleaning up:
Dispose of in accordance with local, State, and national regulations.

Section 7: Handling and storage

7.1 Precautions for safe handling

7.1.1 Protective measures:

Handle and open container with care. Avoid contact with skin and eyes. Use only with adequate ventilation. Use caution when combining with water; DO NOT add water to corrosive liquid, ALWAYS add corrosive liquid to water while stirring to prevent release of heat, steam and fumes.

7.1.2 Advice on general occupational hygiene

Do not get in eyes or on skin or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Eyewash stations and safety showers should be provided with unlimited water supply. Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities:

Technical measures and storage conditions:

Keep away from incompatible materials. Store locked up. Keep container/package tightly closed in a cool, well-ventilated place. Ventilate enclosed areas.

Storage class:

Class 8B: Non-flammable corrosive materials

Section 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Occupational exposure limits:

Limit value type (country of origin)	Substance name	EC-No.	CAS-No	Limit value	Monitoring and observation processes
TWA (ACGIH)	Sulfuric Acid	231-639-5	7664-93-9	0.2 mg/m3	Thoracic fraction
TWA (CA ON)				0.2 mg/m3	Thoracic
STEL(CA QU)				3 mg/m3	
TWA(CA QU)				1 mg/m3	
STEL (CH)				2 mg/m3	
TWA(CH)				1 mg/m3	
STEL(FI)				1 mg/m3	
TWA(FI)				0.2 mg/m3	
Ceiling(DE)				0.1 mg/m3 peak	Inhalable fraction
MAK(DE)				0.1 mg/m3	Inhalable fraction
Ceiling(JP)				1 mg/m3	
TWA(ME)				1 mg/m3	
TWA(NIOSH)				1 mg/m3	
TWA(OSHA)				1 mg/m3	

8.2 Exposure controls

8.2.1 Appropriate engineering controls:

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

8.2.2 Personal protective equipment:

8.2.2.1 Pictograms:

8.2.2.2 Eye/Face protection:
Wear face shield and eye protection.

8.2.2.3 Skin protection:
Wear protective gloves with elbow length gauntlet.
Wear synthetic apron. Under severe exposure or emergency conditions, wear acid-resistant clothing and boots.

8.2.2.4 Respiratory protection:
None required under normal conditions of use. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

9.1.1 Appearance
Physical state: Liquid Color: Clear Odor: Pungent Odor threshold: No Data

9.1.2 Safety relevant basic data
pH (20 ˚C): No Data
Melting point/range(˚C): No Data
Initial boiling point/range (˚C): 95-95.5556
Decomposition temperature (˚C): No Data
Flash point (˚C): No Data
Ignition temperature (˚C): No Data
Vapor pressure (hPa): 10 mmHg
Vapor density (air = 1): 1
Density (g/cm3): 10.1392-11.2658 lbs/gal
Bulk density (kg/m3): No Data
Specific Gravity/Relative Density (water=1): 1.215-1.35
Water solubility (20˚C in g/l): 100%
Solubility(ies): No Data
Partition coefficient: No Data
N-Octanol/Water (log Po/w): No Data
Viscosity, dynamic (mPa s): No Data

9.1.3 Physical hazards:
Flammable gases
Metal corrosion

9.2 Other safety information:
Properties of explosive atmospheres (mixtures):
Gases and vapors: No Data
Dusts: No Data
Physical chemical properties of nanoparticles: No Data
Limiting oxygen concentration: No Data
Bulk density: No Data
Solubility in different media: No Data
Stability in organic solvents and identity of relevant degradation products: No Data

Evaporation rate: 1 n-butyl, Acetate=1
Conductivity: No Data
Surface tension: No Data
Dissociation constant in water (pKa): No Data
Oxidation-reduction Potential: No Data
Fat solubility (solvent – oil to be specified): No Data
Critical temperature: No Data

Section 10: Stability and reactivity

10.1 Reactivity:
Not reactive

10.2 Chemical stability:
Stable under normal temperatures and pressures

10.3 Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4 Conditions to avoid:
Contact with organic materials, combustibles, strong reducing agents, metals, strong oxidizers, water.

10.5 Incompatible materials:
Reacts violently with strong reducing agents, metals, sulfur trioxide, strong oxidizers and water. Contact with metals may product toxic sulfur dioxide fumes and may release flammable hydrogen gas.

10.6 Hazardous decomposition products:
Sulfur trioxide, carbon monoxide, sulfuric acid fumes, and sulfur dioxide.

Section 11: Toxicological Information

11.1 Information on toxicological effects:

Sulfuric Acid (7664-93-9)	Effect dose / Concentration	Species	Method	Time
Acute oral toxicity	2140 mg/kg	Rat	LD50	
Acute inhalative toxicity (vapor)	30 mg/m3	Guinea Pig	LCLo	7 Days (con.)
Acute inhalative toxicity (vapor)	510 mg/m3	Rat	LC50	2 Hours
Acute inhalative toxicity (vapor)	3 mg/m3	Human	LCLo	24 Weeks
Irritation	5 mg	Rabbit	SEV (eye)	30 second rinse
Irritation	250 ug	Rabbit	SEV (eye)	
Water (7732-18-5)	Effect dose / Concentration	Species	Method	Time
Acute oral toxicity	>90 mL/kg	Rat	LD50	

11.2 Other information:

11.2.1 Carcinogenic Effects:
The International Agency for Research on Cancer (IARC) has classified “strong inorganic acid mist containing sulfuric acid” as a Category 1 carcinogen, a substance that is carcinogenic to humans. **This classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery.** Batteries subjected to abusive charging at excessively high currents for prolonged periods without vent caps in place may create a surrounding atmosphere of the offensive strong inorganic acid mist containing sulfuric acid.

Carcinogenic Effects			
	CAS	IARC	NTP
Sulfuric acid	7664-93-9	Group 1-Carcinogenic	Not established

11.2.2 Routes of exposure:
11.2.2.1 In case of ingestion:
(Acute): May cause irreversible damage to mucous membranes.
(Chronic): Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal disturbances.
11.2.2.2 In case of skin contact:
(Acute): Causes severe skin burns and eye damage.
(Chronic): Repeated or prolonged exposure to corrosive materials will cause dermatitis.
11.2.2.3 In case of inhalation:
(Acute): May cause corrosive burns – irreversible damage.
(Chronic): Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.
11.2.2.4 In case of eye contact:
(Acute): Causes serious eye damage.
(Chronic): Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

Section 12: Ecological information

12.1 Toxicity:
Aquatic toxicity
12.1.1 Substances
Acute (short-term) toxicity: Sulfuric Acid

Effect dose	Exposure time	Species	Method	Evaluation	Remark
82 mg/L	24 Hours	Brachydanio rerio	LC50		
22 mg/L	96 Hours	Cyprinus carpio	LOEC		Lowest observable effect concentration

Section 13: Disposal considerations

13.1 Waste treatment methods
13.1.1 Product/packaging disposal:
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
13.1.2 Waste codes/waste designations according to EWC/AVV:
16 06 06
13.2 Additional information:
Any waste marked with an asterisk (*) is considered as a hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

Section 14: Transport Information

14.1 Land transport (CFR 49: DOT)
UN-No: UN2796
Proper shipping name: Battery fluid, acid
Class(es): 8
Packing group: II
Hazard label(s): 8
Special provision(s)/Exceptions: A3, A7, B2, B15, IB2, N6, N34, T8, TP2, 154
Passenger aircraft/rail: 1.00 L
Cargo aircraft/rail: 30.00 L

14.2 Land transport (ADR/RID/GGVSEB):
UN-No: UN2796
Proper shipping name: Battery fluid, acid
Class(es): 8
Classification Code: C1
Packing group: II
Hazard label(s):8
Special provision(s): -

14.3 Land transport (TDG):
UN-No: UN2796
Proper shipping name: Battery fluid, acid
Class(es): 8
Packing group: II
Hazard label(s): 8
Special provision(s): -
Explosive Limit and Limited Quantity Index: 1.00
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index: 1.00

14.4 Sea transport (IMDG-Code/GGVSee):
UN No: UN2796
Proper shipping name: Battery fluid, acid
Class(es): 8
Packing group: II
Marine Pollutant: No
Special provision(s): -

14.5 Air transport (ICAO-IATA/DGR):
UN No: UN2796
Proper shipping name: Battery fluid, acid
Class(es): 8
Packing group: II
Special provision(s): -

Section 15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the mixture

15.1.1 National regulations(Canada):
WHMIS Classification:
Class E: Corrosive materials present at greater than 1%
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Controlled Products Regulations.
Canada DSL:
The following substances are listed on the Canadian DSL:
Sulfuric Acid (7664-93-9); Water (7732-18-5)
Canada NDSL:
None of the components on this SDS are listed on the Canadian NDSL:

WHMIS:

Ingredient Disclosure List

Substance	CAS No.	Wt %	Disclosure Limit %
Sulfuric Acid	7664-93-9	30-40%	1%
Water	7732-18-5	60-70%	Not Listed

CEPA:

Priority Substances List

Substance	CAS No.	Wt %	Status
Sulfuric Acid	7664-93-9	30-40%	Not Listed
Water	7732-18-5	60-70%	Not Listed

15.1.2 National regulations(China):
The following components are listed on the Inventory list for China:
Sulfuric Acid (7664-93-9); Water (7732-18-5)

15.1.3 National regulations(European Union):
Classification:
Xn; Xi; C
Risk Phrases:
R35, R36, R38
Safety Phrases:
S1/2, S26, S30, S45
The following components are listed on the EU EINECS:
Sulfuric acid (7664-93-9); Water (7732-18-5)
None of the above mentioned components are listed on the EU ELNICS.

CLP (1272/2008) Concentration Limits

Substance	CAS	WT %	Concentration Limit
Sulfuric Acid	7664-93-9	30-40	15%<=C: C; R35 5%<=C<15%: Xi; R36/38
Water	7732-18-5	60-70	Not Listed

Substance	CAS	WT %	Substances and Preparations
Sulfuric Acid	7664-93-9	30-40	B
Water	7732-18-5	60-70	Not Listed

Germany

Emission Limits for Inorganic Dusts

Substance	CAS	WT %	Emission Limit
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

15.1.4 National regulations(Japan):
The following chemicals are on the Japanese ENCS:
Sulfuric Acid (7664-93-9); Water (7732-18-5)

ISHL Harmful substances whose names are to be indicated on the label

Substance	CAS	WT %	Limit
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

ISHL Prevention of Lead Poisoning

Substance	CAS	WT %	Status
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

ISHL Notifiable Substances

Substance	CAS	WT %	Limit
Sulfuric Acid	7664-93-9	30-40	1% weight
Water	7732-18-5	60-70	Not Listed

Air Pollution Control Law: Emission Standards for Air Pollutants

Substance	CAS	WT %	Emission Limit
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

Pollutant Release Transfer Register (PRTR): Class 1 Substances

Substance	CAS	WT %	Status
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

ISHL Working Environment Evaluation Standards: Administrative Control Levels

Substance	CAS	WT %	Limit
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not listed

15.1.5 National regulations(Korea):
The following substances are listed on the Korean KECL:
Sulfuric Acid (7664-93-9); Water (7732-18-5)

15.1.6 National regulations(Mexico):
Pollutant Release and Transfer Register: Reporting Emissions

Substance	CAS	WT %	Threshold Quantities
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

15.1.7 National regulations(United States):
The following substances are on the MA, NJ, and PA Right To Know Lists:
Sulfuric Acid (7664-93-9); Water (7732-18-5)

The following substances are on the TSCA inventory:
Sulfuric Acid (7664-93-9); Water (7732-18-5

OSHA: Specifically Regulated Chemicals

Substance	CAS	WT %	Limit
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

CAA: 1990 Hazardous Air Pollutants

Substance	CAS	WT %	Limit
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

CERCLA/SARA

Hazardous Substances and Their Reportable Quantities

Substance	CAS	WT %	Reportable Quantity
Sulfuric Acid	7664-93-9	30-40	1000 lb final RQ; 454 kg final RQ
Water	7732-18-5	60-70	Not Listed

Section 302 Extremely Hazardous Substances EPCRA RQs

Substance	CAS	WT %	Reportable Quantity
Sulfuric Acid	7664-93-9	30-40	1000 lb EPCRA RQ
Water	7732-18-5	60-70	Not Listed

Section 302 Extremely Hazardous Substances TPQs

Substance	CAS	WT %	Threshold Planning Quantity
Sulfuric Acid	7664-93-9	30-40	1000 lb TPQ
Water	7732-18-5	60-70	Not Listed

RCRA

Basis for Listing: Appendix VII

Substance	CAS	WT %	Basis
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

D Series Wastes: Max Concentration of Contaminants for the Toxic Characteristic

Substance	CAS	WT %	Regulatory Level
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

Hazardous Constituents: Appendix VIII to 40 CFR 261

Substance	CAS	WT %	Status
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

California: California Proposition 65

Substance	CAS	WT %	Status
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

Pennsylvania

Environmental Hazard list

Substance	CAS	WT %	Regulatory Level
Sulfuric Acid	7664-93-9	30-40	
Water	7732-18-5	60-70	Not Listed

Special hazardous Substances

Substance	CAS	WT %	Regulatory Level
Sulfuric Acid	7664-93-9	30-40	Not Listed
Water	7732-18-5	60-70	Not Listed

Rhode Island: Hazardous Substances List

Substance	CAS	WT %	Regulatory Level
Sulfuric Acid	7664-93-9	30-40	Toxic; Flammable
Water	7732-18-5	60-70	Not Listed

Section 16: Other Information

16.1 Relevant R-, H- and EUH-phrases (number and full text):

Hazard Abbreviations:
Xn: Harmful
Xi: Irritant
C: Corrosive

Risk Phrases:
R35: Causes severe burns
R36: Irritating to eyes
R38: Irritating to skin

Safety Phrases:
S1/2: Keep locked up and out of the reach of children
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S30: Never add water to this product
S45: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

Hazard statements:
H314: Causes severe skin burns and eye damage
H315: Causes skin irritation
H335: May cause respiratory irritation

Precautionary statements:
P102: Keep out of reach of children.
P233: Keep containers tightly closed.
P210: Keep away from heat, sparks, and open flame while charging batteries.

16.2 Further information:

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Yuasa, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Yuasa, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.