Safety Data Sheet

1. IDENTIFICATION

Product Name: Lead Acid Battery **Synonyms:** SLI Battery	**Product Use:** Vehicle Electrical System **Manufacturer/Supplier:** Johnson Controls Battery Group **Address:** P.O. Box 590 Milwaukee, Wi 53201 US
General Information Number: (800)-333-2222 ext. 3138 **Contact Person:** Industrial Hygiene & Safety Department	**Emergency number:** CHEMTREC: 800-424-9300

NOTE: The Johnson Controls sealed cell/battery is considered an article as defined by 29 CFR 1910.1200 (OSHA Hazard Communication Standard). The information contained in this SDS is supplied at the customer's request for information only.

2. HAZARD(S) IDENTIFICATION

Health		Environmental		Physical	
Toxicity (repeated exposure)	Category 2	Aquatic	Chronic 1	Explosive Chemical	Division 1.3
Acute Toxicity (Oral/Dermal/Inhalation	Category 4	Aquatic	Acute 1		
Skin Corrosion/Irritation	Category 1A				
Eye Damage	Category 1				
Reproductive	Category 1A				
Carcinogenicity (lead)	Category 2A				
Carcinogenicity (acid mist)	Category 1A				
Specific Target Organ	Category 1A				

Label Elements:

Health	Environmental	Physical
		
Hazard Statements **DANGER!** Causes severe skin burns and eye damage. Causes serious eye damage. May damage fertility or the unborn child if ingested or inhaled. May cause cancer if ingested or inhaled. Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure.	***Precautionary Statements*** Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing, eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Causes skin irritation, serious eye damage. Contact with internal components may cause irritation or severe burns. Avoid contact with internal acid. Irritating to eyes, respiratory system, and skin.	

May form explosive air/gas mixture during charging. Extremely flammable gas (hydrogen). Explosive, fire, blast or projection hazard.	

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical/Common Names):	CAS No.:	% by Wt:
Lead	7439-92-1	34
Lead Oxide	1309-60-0	31
Sulfuric Acid	7664-93-9	34
Lead Sulfate	7446-14-2	<1

Composition Comments All concentrations are in percent by weight.

4. FIRST AID MEASURES

Note: Under normal conditions of battery use, internal components will not present a health hazard. The following information is provided for battery electrolyte (acid) and lead for exposures that may occur during battery production or container breakage or under extreme heat conditions such as fire.

Inhalation Sulfuric Acid: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician.
Lead: Remove from exposure, gargle, wash nose and lips; consult physician.

Skin contact Sulfuric Acid: Give large quantities of water; Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death; consult physician.
Lead: Consult physician immediately.

Eye contact Sulfuric Acid and Lead: Flush immediately with large amounts of water for at least 15 minutes while lifting lids; Seek immediate medical attention if eyes have been exposed directly to acid.

Ingestion Sulfuric Acid: Give large quantities of water; Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death; consult physician.
Lead: Consult physician immediately.

5. FIRE FIGHTING MEASURES

Flash Point Not applicable unless individual components exposed.

Auto ignition Temperature No data available.

Flammable Limits LEL = 4.1% (Hydrogen Gas in air) ; UEL = 74.2%

Extinguishing Media CO_2; foam; dry chemical. Do not use carbon dioxide directly on cells. Avoid breathing vapors. Use *appropriate media for surrounding fire.*

Special Fire Fighting Procedures Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but note that strings of series connected batteries may still pose risk of electric shock even when charging equipment is shut down.

Unusual Fire and Explosion Hazard Highly flammable hydrogen gas is generated during charging and operation of batteries. If ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery. Follow manufacturer's instructions for installation and service.

6: ACCIDENTAL RELEASE MEASURES

Protective Measures to be Stop flow of material, contain/absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium

Flammability		
Upper/lower flammability or explosive limits	Hydrogen	Flammability Limit Lower- 4.1 % Flammability Limit Upper – 74.2 %
Vapor Pressure	Not applicable.	
Vapor Density	3.4 (Air = 1) Battery Electrolyte (Acid)	
Relative Density	1.21 - 1.3 Battery Electrolyte (Acid)	
Solubility	Lead and Lead dioxide are not soluble. 100 % Battery Electrolyte (Acid).	
% Volatile by Weight	Not applicable unless individual components exposed.	
Partition coefficient (n-octanol/water)	Not applicable	
Auto-ignition temperature	1076 °F (580 °C) Hydrogen.	
Decomposition temperature	Not applicable	
Viscosity	Not applicable	

10. STABILITY AND REACTIVITY

Stability	The sealed battery is considered stable.
Conditions to Avoid	Sparks and other sources of ignition; high temperature; over charging.
Incompatibility (materials to avoid)	Electrolyte: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas. Lead compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents. Arsenic compounds: strong oxidizers; bromine azide. NOTE: hydrogen gas can react with inorganic arsenic to form the highly toxic gas – arsine
Hazardous Decomposition Products	Electrolyte: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide. Lead compounds: Temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.
Hazardous Polymerization	Will not occur.

11. TOXICOLOGICAL INFORMATION

NOTE: Under normal conditions of use, this product does not present a health hazard. The following information is provided for organic electrolyte and lead exposure that may occur due to container breakage or under extreme conditions such as fire. Organic electrolyte – reacts with moisture/water to produce hydrofluoric acid in trace quantities. Hydrofluoric acid is extremely corrosive and toxic. In severe exposures it acts as a systemic poison and causes severe burns. The reaction may be delayed. Any contact with this material, even minor, requires immediate medical attention.

ROUTES AND METHODS OF ENTRY

Inhalation	**EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.** Sulfuric Acid: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation. Lead Compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.
Skin Contact	**EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.** Sulfuric Acid: Severe irritation, burns and ulceration. Lead Compounds: Not absorbed through the skin.

Skin Absorption

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.

In the event of overcharging or damage to the unit, exposure to organic electrolyte solution/mist is possible. Extreme exposures to the organic electrolyte can be absorbed through the skin.

Eye Contact

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.

Sulfuric Acid: Severe irritation, burns, cornea damage, and blindness.
Lead Compounds: May cause eye irritation.

Ingestion

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.

Sulfuric Acid: May cause severe irritation of mouth, throat, esophagus and stomach.
Lead Compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and must be treated by a physician.

SIGNS AND SYMPTONS OF OVEREXPOSURE

Acute Effects

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.

Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation.
Lead Compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability

Chronic Effects

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.

Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat & bronchial tubes.
Lead Compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and females. Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abnormal conduction velocities in persons with blood lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of sulfuric acid with skin may aggravate diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.

ADDITIONAL HEALTH DATA

All heavy metals, including the hazardous ingredients in this product, are taken into the body primarily by inhalation and ingestion. Most inhalation problems can be avoided by adequate precautions such as ventilation and respiratory protection covered in Section 8. Follow good personal hygiene to avoid inhalation and ingestion: wash hands, face, neck and arms thoroughly before eating, smoking or leaving the work site. Keep contaminated clothing out of non-contaminated areas, or wear cover clothing when in such areas. Restrict the use and presence of food, tobacco and cosmetics to non-contaminated areas. Work clothes and work equipment used in contaminated areas must remain in designated areas and never taken home or laundered with personal non-contaminated clothing. This product is intended for industrial use only and should be isolated from children and their environment.

The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

Toxicological Data

Constituents	**Species**	**Test Results**
Sulfuric Acid (CAS 7664-93-9)		
Acute		
Oral		
LD50	Rat	2140 mg/kg

CARCINOGENICITY

Sulfuric Acid: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category I 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. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist.

Lead Compounds: Lead is listed as a Group 2A- carcinogen, likely in animals at extreme doses. Per the guidance found in OSHA 29

United States DOT:

DOT rules specified in 49 CFR 173.59 regulate the transport of wet spillable batteries.

49 CFR 173.59 (e) specifies that when transported by highway or rail, electric storage batteries containing electrolyte or corrosive battery fluid are not subject to any other requirements of this subchapter, if all of the following are met:
(1) No other hazardous materials may be transported in the same vehicle;
(2) The batteries must be loaded or braced so as to prevent damage and short circuits in transit;
(3) Any other material loaded in the same vehicle must be blocked, braced, or otherwise secured to prevent contact with or damage to the batteries; and
(4) The transport vehicle may not carry material shipped by any person other than the shipper of the batteries.
If any of these requirements are not met, the batteries must be shipped as hazardous materials

Proper Shipping name	Batteries, Wet, Filled with Acid
UN number	UN2794
Hazard classification	8
Packing group	III
Labels	Corrosive

IATA

Proper Shipping name	Batteries, Wet, Filled with Acid
Packing group	None
Hazardous class	8
Label/Placard Required	*Corrosive*
UN Identification	UN2794
Environmental Hazards	No
ERG Code	8L
Reference	IATA packing instructions 870 (IATA DRG Edition 54)

IMDG

Proper Shipping name	Batteries, Wet, Filled with Acid
Packing group	N/A
Hazardous class	8
Label/Placard Required	Corrosive
UN Identification	UN2794
Environmental Hazards	No
EmS	F-A, S-B
Reference	IMDG packing instructions P801

15. REGULATORY INFORMATION

This product is an article pursuant to 29 CFR 1910.1200 and as such is not subjected to the OSHA Hazard Communication Standard.

TSCA

TSCA Section 8b – Inventory Status:

Inventory Status: All chemicals comprising this product are either exempt or listed on the TSCA Inventory.

TSCA Section 12b (40 CFR Part 707.60(b))

No notice of export will be required for articles, except PCB articles, unless the Agency so requires in the context of individual section 5, 6, or 7 actions.

TSCA Section 13 (40 CFR Part 707.20)

No import certification required (EPA 305-B-99-001, June 1999, Introduction to the Chemical Import Requirements of the Toxic Substances Control Act, Section IV.A)

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Lead (CAS 7439-92-1) Reproductive toxicity

	Central nervous system
	Kidney
	Blood
	Acute toxicity
Lead Oxide (CAS 1309-60-0)	Reproductive toxicity
	Central nervous system
	Kidney
	Blood
	Acute toxicity
Lead Sulfate (CAS 7446-14-2)	Reproductive toxicity
	Central nervous system
	Kidney
	Blood
	Acute toxicity

EPA SARA Title III

Section 302 EPCRA Extremely Hazardous Substances (EHS):

Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs. EPCRA Section 302 notification is required if 500 lbs. or more of sulfuric acid is present at one site (40 CFR 370.10). For more information consult 40 CFR Part 355.

Section 304 CERCLA Hazardous Substances:

Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know Act) is 1,000 lbs. State and local reportable quantities for spilled sulfuric acid may vary.

Section 311/312 Hazard Categorization:

EPCRA Section 312 Tier Two reporting is required for non-automotive batteries if sulfuric acid is present in quantities of 500 lbs. or more and/or if lead is present in quantities of 10,000 lbs. or more. For more information consult 40 CFR 370.10 and 40 CFR 370.40

Section 313 EPCRA Toxic Substances:

40 cfr section 372.38 (b) states: If a toxic chemical is present in an article at a covered facility, a person is not required to consider the quantity of the toxic chemical present in such article when determining whether an applicable threshold has been met under § 372.25, § 372.27, or § 372.28 or determining the amount of release to be reported under § 372.30. This exemption applies whether the person received the article from another person or the person produced the article. However, this exemption applies only to the quantity of the toxic chemical present in the article.

Supplier Notification:

This product contains toxic chemicals that may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements. For a manufacturing facility under SIC codes 20 through 39, the following information is provided to enable you to complete the required reports:

RCRA

Spent Lead Acid Batteries are subject to streamlined handling requirements when managed in compliance with 40 CFR section 266.80 or 40 CFR part 273. Waste sulfuric acid is a characteristic hazardous waste; EPA hazardous waste number D002 (corrosivity) and D008 (lead).

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Lead (CAS 7439-92-1)
Lead Oxide (CAS 1309-60-0)
Lead Sulfate (CAS 7446-14-2)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Lead Sulfate (CAS 7446-14-2)

Safe Drinking Water Act (SDWA)

Not regulated

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Sulfuric acid (CAS 7664-93-9) 6552

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Sulfuric acid (CAS 7664-93-9) 20 % WV

DEA Exempt Chemical Mixtures Code Number

Sulfuric acid (CAS 7664-93-9 6552

US State Regulations

US. Massachusetts RTK – Substance List

Lead (CAS 7439-92-1)
Lead Oxide (CAS 1309-60-0)
Lead Sulfate (CAS 7446-14-2)

US New Jersey Worker and Community Right-to-know Act

Lead (CAS 7439-92-1)
Lead Oxide (CAS 1309-60-0)
Lead Sulfate (CAS 7446-14-2)
Sulfuric acid (CAS 7664-93-9)

US Pennsylvania Worker and Community Right-to-know Law

Lead (CAS 7439-92-1)
Sulfuric acid (CAS 7664-93-9)

US Rhode Island RTK

Lead (CAS 7439-92-1)
Lead Oxide (CAS 1309-60-0)
Lead Sulfate (CAS 7446-14-2)
Sulfuric acid (CAS 7664-93-9)

US. California Proposition 65

WARNING: This product contains chemicals known to the State of California to cause cancer.
Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm. Wash hands after handling.

*Battery companies not party to the 1999 consent judgment with Mateel Environmental Justice Foundation should include a Proposition 65 Warning that complies with the current version of Proposition 65.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Lead (CAS 7439-92-1)
Lead Oxide (CAS 1309-60-0)
Lead Sulfate (CAS 7446-14-2)
Sulfuric acid (CAS 7664-93-9)

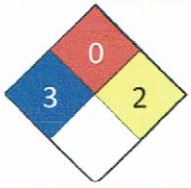
International Inventories

Country(s) or Region	Inventory Name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

* A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. OTHER INFORMATION

Issue Date: 04/01/2015
Revision Date: -
Version #: 01
Further information: NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3=Serious 4 = Severe
NFPA ratings



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used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.