

MATERIAL SAFETY DATA SHEET

MSDS No
L 8
Date Issued
Nov. 15, 1985
Date Revised
Sept. 15, 1993

I. Product Identification

Chemical Trade Name (identity used on label)		Chemical Family Classification	
Lead Acid Battery		Electric Storage Battery	
Synonyms/Common Name		DOT, IATA and IMO Description	
SLI or Industrial Battery		Battery, Wet, Filled with Acid, UN2794, Class 8	
Company Name		Address	
Johnson Controls Battery Group, Inc.		P.O. Box 591	
Division or Department		Milwaukee, WI 53201	
Starting, Lighting, Ignition Division & Specialty Battery Division			
CONTACT		TELEPHONE NUMBER	
Questions Concerning MSDS		Day: (414) 228-3138	
Industrial Hygiene & Safety Department			
Transportation Emergencies		24 Hours: (800) 424-9300	
CHEMTREC			

II. Hazardous Ingredients

Material	% by Wt.	CAS Number	Exposure Limits		
			OSHA	ACGIH	Other
Specific Chemical Identity					
Lead					
Common Name	34	7439-92-1	50 µg/m ³	150 µg/m ³	NIOSH 100 µg/m ³
Grid					
Specific Chemical Identity					
Lead Dioxide					
Common Name	31	1309-60-0	50 µg/m ³	150 µg/m ³	NIOSH 100 µg/m ³
Lead Oxide					
Specific Chemical Identity					
Lead Sulfate					
Common Name	<1	7446-14-2	50 µg/m ³	150 µg/m ³	NIOSH 100 µg/m ³
Angilite					
Specific Chemical Identity					
Sulfuric Acid (35%)					
Common Name	34	7664-93-9	1 mg/m ³	1 mg/m ³	NIOSH 1 mg/m ³
Battery Electrolyte (Acid)					
Specific Chemical Identity					
Common Name					
Specific Chemical Identity					
Common Name					

NOTE: The contents of this product are toxic chemicals that are subject to the reporting requirements of section 302 and 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40CFR 355 and 372).

III. Physical Data

Materials (at normal temperatures)		Appearance and Odor	
☒ Solid ☒ Liquid		Battery electrolyte (acid) is a clear to cloudy liquid with slight acidic odor. Acid saturated lead oxide is a dark reddish-brown to gray solid with slight acidic odor.	
Boiling Point (at 760 mm Hg)	Melting Point	Vapor Pressure ☒ (mm Hg at 20°C) ☐ (PSIG)	
Lead 1755°C	Lead 327.4°C	Battery Electrolyte (Acid) 11.7	
Batt. Electrolyte (Acid) 110-112°C		Battery Electrolyte (Acid) is 100% soluble in water.	
Specific Gravity (H ₂ O = 1)		Lead - Lead Dioxide are not soluble.	
Battery Electrolyte (Acid) 1.210 - 1.300		Evaporation Rate (Butyl Acetate = 1)	
Vapor Density (Air = 1)		Not Determined	
Battery Electrolyte (Acid) 3.4		Not Determined	
Volatiles By Weight			
Not Determined			

IV. Health Hazard Information

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 exposure that may occur during battery production or container breakage or under extreme heat conditions such as a fire.

ROUTES AND METHODS OF ENTRY

Inhalation

Acid mist generated during battery formation may cause respiratory irritation. Spillage of acid from batteries in confined areas may also lead to exposure to sulfuric acid mist.

Skin Contact

Battery electrolyte (acid) may cause irritative contact dermatitis.

Skin Absorption

Skin absorption is not a significant route of entry.

Eye Contact

Battery electrolyte (acid) will irritate the eyes upon contact.

Ingestion

Hands contaminated by contact with internal components of a battery can cause ingestion of lead/lead compounds. Hands should be washed prior to eating, drinking, or smoking.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Acute Effects

Acute effects of overexposure to lead compounds are: GI (gastrointestinal) upset which may be loss of appetite, diarrhea and/or constipation with cramping, difficulty in sleeping, and fatigue. Exposure and/or contact with battery electrolyte (acid) may lead to acute irritation of the skin, corneal damage of the eyes, and irritation of the mucous membranes of the eyes and upper respiratory system including lungs.

Chronic Effects

Lead and its compounds may cause chronic anemia, damage to the kidneys and nervous system. Lead may also cause reproductive system damage and can affect developing fetuses in pregnant women. Battery electrolyte (acid) may lead to scarring of the cornea and chronic bronchitis as well as erosion of tooth enamel in mouth breathers in repeated exposures.

POTENTIAL TO CAUSE CANCER

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. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may however result in the generation of sulfuric acid mist.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation

Remove from exposure and consult a physician if any of the acute effects listed above develop.

Skin

Wash thoroughly with soap and water. If acid is splashed on clothing, remove and discard. If acid is splashed in shoes, remove them immediately and discard. Acid cannot be removed from leather.

Eyes

IMMEDIATELY rinse with cool running water for at least 15 minutes. Seek medical attention after rinsing.

Ingestion

Lead/lead compounds: Consult a physician.

Battery Electrolyte (Acid): Do not induce vomiting. Refer to a physician immediately.

MEDICAL CONDITIONS WHICH CAN BE AGGRAVATED BY EXPOSURE

Inorganic lead and its compounds can aggravate chronic forms of kidney, liver, and neurologic diseases. Contact of battery electrolyte (acid) with the skin may aggravate skin diseases such as eczema and contact dermatitis.

V. Fire and Explosion Data

Flash Point (test method)	Autoignition Temperature	Flammable Limits in Air, by Vol
Hydrogen – 259°C	Hydrogen 580°C	Hydrogen LEL – 4.1 UEL – 74.2
Extinguishing Media		
Dry chemical, foam, or CO ₂ .		
Special Fire Fighting Procedures		
Use positive pressure, self-contained breathing apparatus.		
Unusual Fire and Explosion Hazard		
Hydrogen and oxygen gases are produced in the cells during normal battery operation, hydrogen is flammable and oxygen supports combustion. These gases enter the air through the vent caps. To avoid the chance of a fire or explosion, keep sparks and other sources of ignition away from the battery.		

VI. Reactivity Data

Stability	Conditions to avoid
☐ Unstable ☒ Stable	Sparks and other sources of ignition may ignite hydrogen gas.
Incompatibility (material to avoid)	
Lead/lead compounds: Potassium, carbides, sulfides, peroxides, phosphorus, sulfur. Battery electrolyte (acid): Combustible materials, strong reducing agents, most metals, carbides, organic materials, chlorates, nitrates, picrates, and fulminates.	
Hazardous Decomposition Products	
Lead/lead compounds: Oxides of lead and sulfur Battery electrolyte (acid): Hydrogen, sulfur dioxide, sulfur trioxide	
Hazardous Polymerization	Conditions to avoid
☐ May Occur ☒ Will Not Occur	High temperature. Battery electrolyte (acid) will react with water to produce heat. Can react with oxidizing or reducing agents.

VII. Control Measures

Engineering Controls	
Store lead/acid batteries with adequate ventilation. Room ventilation is required for batteries utilized for standby power generation. Never recharge batteries in an unventilated, enclosed space.	
Work Practices	
Make certain vent caps are on tightly. Place a minimum of two layers of corrugated cardboard between layers of batteries. When stacking in trailer, stack no more than three layers high. Use a battery carrier to lift a battery or place hands at opposite corners to avoid spilling acid through the vents. Avoid contact with internal components of the batteries.	
PERSONAL PROTECTIVE EQUIPMENT	
Respiratory Protection	
None required under normal handling conditions. During battery formation (high-rate charge condition), acid mist can be generated which may cause respiratory irritation. If irritation occurs, wear a respirator suitable for protection against acid mist.	
Eyes and Face	
Chemical splash goggles are preferred. Also acceptable are "Visor-Gogs" or a chemical faceshield worn over safety glasses.	
Hands, Arms, Body	
Vinyl coated, PVC, gauntlet type gloves with rough finish.	
Other Special Clothing and Equipment	
Safety shoes worn with rubber/neoprene boots or steel-toed rubber/neoprene boots to be worn over socks. Place pants' legs over boots to keep acid out of boots. All footwear must meet requirements of ANSI Z41.1 – Rev. 1972.	

VIII. Safe Handling Precautions

Hygiene Practices

Wash hands thoroughly before eating, drinking, or smoking after handling batteries.

Protective Measures to be taken During Non-routine Tasks including Equipment Maintenance

Wear recommended eye protection. If clothing becomes saturated with acid, remove and wash affected area with water for 15 minutes. Discard saturated clothing.

SPILL OR LEAK PROCEDURES

Protective Measures to be taken if Material is Released or Spilled

Remove combustible materials and all sources of ignition. Contain spill by diking with soda ash (sodium carbonate) or quicklime (calcium oxide). Cover spill with either chemical. Mix well. Make certain mixture is neutral then collect residue and place in a drum or other suitable container. Dispose of as hazardous waste. Wear acid resistant boots, chemical faceshield, chemical splash goggles, and acid resistant gloves. DO NOT RELEASE UNNEUTRALIZED ACID!

Waste Disposal Method

Battery Electrolyte (Acid): Neutralize as above for a spill, collect residue, and place in a drum or suitable container. Dispose of as hazardous waste.

DO NOT FLUSH LEAD CONTAMINATED ACID TO SEWER.

Batteries: Send to lead smelter for reclamation following applicable Federal, state, and local regulations.

OTHER HANDLING AND STORAGE PRECAUTIONS

An eyewash fountain and safety shower should be located in or near the production or storage area(s) for lead/acid batteries. Such storage areas should be equipped with a containment facility which captures spills of acid so that they may be neutralized, collected, and disposed of properly.