

**STEEL FIRE EQUIPMENT LTD.**

150 Superior Blvd.  
Mississauga, Ontario L5T 2L2

ATT  
GREG

**MATERIAL SAFETY DATA SHEET**

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

**PART I** What is the material and what do I need to know in an emergency?**1. PRODUCT IDENTIFICATION**TRADE NAME (AS LABELED):

ABC DRY CHEMICAL

SYNONYMS:

Multi-Purpose Dry Chemical

MANUFACTURER'S NAME:

STEEL FIRE EQUIPMENT LTD.

ADDRESS:

150 Superior Blvd.

Mississauga, Ontario L5T 2L2

BUSINESS PHONE:

(905) 564-1500

DATE OF PREPARATION:

October 1, 2001

**2. COMPOSITION AND INFORMATION ON INGREDIENTS**

CHEMICAL NAME	CAS #	% WT/W	EXPOSURE LIMITS IN AIR						OTHER
			ACGIH		OSHA			IDLH mg/m3	
			TLV mg/m3	REL mg/m3	PEL mg/m3	STEL mg/m3			
Mono Ammonium Phosphate	7713-76-1	95	ACGIH TLV for particulates, Not Otherwise Classified = 10; OSHA PEL for Particulates Not Otherwise Regulated, Total Dust = 12, Respirable Fraction 5.						
Ammonium Sulfate	7783-36-3								
Water	12001-36-2	< 3	3 (Respirable Fraction)	NE	3 (Respirable Fraction)	NE		NE	NE
Ammonia	8001-16-3	< 3	NE	NE	NE	NE		NE	NE
Mineral Oil	63148-37-2	< 1	NE	NE	NE	NE		NE	NE
Sodium Bicarbonate	471-54-1	< 1	ACGIH TLV for particulates, Not Otherwise Classified = 10; OSHA PEL for Particulates Not Otherwise Regulated, Total Dust = 12, Respirable Fraction 5.						
Silica	112926-00-8	< 1	2	NE	4	NE		NE	NE
Yellow Pigment	5466-79-7	< 1	NE	NE	NE	NE		NE	NE

NE = Not Established C= Ceiling Level See Section 16 for Definitions of Terms Used.

Note: All WHMIS required information is included. It is located in appropriate sections on the ANSI 400.1-1996 format.

### 3. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:** This mixture of dry chemicals poses little hazard. Mechanical irritation of the eyes is possible during the use and maintenance of the extinguishing units. Chronic inhalation of any particulate may damage the lungs.

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** Over-exposure to this product may cause mild skin irritation moderate eye irritation, and possible gastric distress. The product is not known to cause chronic illness.

**INHALATION:** Inhalation of this product should be avoided, but if it occurs, may cause mild irritation of the nose, throat, and other tissues of the respiratory system.



**CONTACT WITH SKIN OR EYES:**

Contact of dust from this product with the eyes may cause moderate irritation, reddening of the affected eye, and discomfort.

**SKIN ABSORPTION:** No component of this product is known to absorb through the skin.

**INGESTION:** Ingestion of this product may cause mild gastric distress.

**INJECTION:** While injection of this product is unlikely, it may occur as a result of a puncture or cut with a sharp object contaminated with the extinguishing agent. Mild symptoms, similar to those of skin irritation may occur.

HAZARDOUS MATERIAL INFORMATION SYSTEM			
HEALTH	(BLUE)	1	
FLAMMABILITY	(RED)	0	
REACTIVITY	(YELLOW)	0	
PROTECTIVE EQUIPMENT			
EYES	RESPIRATION	HANDS	BODY
	See Section II		See Section II

For routine industrial applications.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.** This product poses low, acute health risks.

**ACUTE:** This extinguishing material presents only a slight risk of causing acute health effects. If such effects occur, they will be in form of mild irritation of the skin, nose, or throat and moderate irritation of the eyes. If ingested, this product may cause an upset stomach.

**CHRONIC:** This product is not known to cause chronic illnesses or diseases.

## PART II What should I do if a hazardous situation occurs?

### 4. FIRST AID MEASURES

**SKIN EXPOSURE:** If spilled on skin, immediately begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. If reddening or irritation occurs, victim and rescuers must seek immediate medical attention.

**PART III**

How can I prevent hazardous situations from occurring?

**7. HANDLING and STORAGE**

**WORK PRACTICES AND HYGIENE PRACTICES:** Avoid getting chemicals ON YOU or IN YOU. Wash hands after handling chemicals. Do not eat or drink while handling chemicals.

**STORAGE AND HANDLING PRACTICES:** All employees who handle this material should be trained to handle it safely. Avoid breathing dusts generated by this product.

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment using soapy water before maintenance begins. Collect all rinsates and dispose of according to applicable Federal, Provincial, or local procedures.

**8. EXPOSURE CONTROLS - PERSONAL PROTECTION**

**VENTILATION AND ENGINEERING CONTROLS:** Use with adequate ventilation. Use a mechanical fan or vent area to outside.

**RESPIRATORY PROTECTION:** Respiratory protection is not expected to be needed. Maintain airborne contaminant concentrations below guidelines for nuisance particulates: 10 mg/m<sup>3</sup> (total particulates) or 5 mg/m<sup>3</sup> (respirable particulates). If respiratory protection is needed, use only protection authorized in 29CFR 1910.134, or applicable Provincial regulations. Use supplied air respiratory protection if oxygen levels are below 19.5%.

**EYE PROTECTION:** Safety glasses.

**HAND PROTECTION:** Wear rubber gloves for routine industrial use. Use triple gloves for spill response, as stated in Section 6 of MSDS.

**BODY PROTECTION:** Use body protection appropriate for task.

**9. PHYSICAL and CHEMICAL PROPERTIES**

**VAPOR DENSITY:** Not applicable

**SPECIFIC GRAVITY:** Approximately 0.85

**SOLUBILITY IN WATER:** Not soluble. Water repellent coating

**VAPOR PRESSURE mm Hg @ 20 °C:** Not applicable

**APPEARANCE AND COLOR:** This material is a finely divided, yellowish powder.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** This product does not have any specific warning properties.

**EVAPORATION RATE (n-BuAc=1):** Not applicable

**MELTING POINT RANGE:** Not applicable

**BOILING POINT:** Not applicable

**pH (10% solution):** Approximately 4-5

## 10. STABILITY and REACTIVITY

STABILITY: Stable

DECOMPOSITION PRODUCTS: Sulfur oxides, carbon monoxide and carbon dioxide.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong alkalis, magnesium, swimming pool sanitizers (inorganic perchlorates, sodium dichloroisocyanurate dihydrate, trichloroisocyanuric acid, calcium hypochlorite, and other strong oxidizers).

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Incompatible materials.

### PART IV

Is there any other useful information about this material?

## 11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The following data is available for components of this product greater than 1 percent by weight in concentration.

### AMMONIUM SULFATE

TDLo (oral, man) = 150 mg/kg

LD50 (oral, rat) = 3000 mg/kg

LD50 (interperitoneal, rat) = 610 mg/kg

### MONO-AMMONIUM PHOSPHATE

No toxicology information listed.

### SUSPECTED CANCER AGENT:

This product's ingredients are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA. A variety of silica forms (i.e. crystalline, fumed) are reported in IARC as a Group 3 Compound (Human Inadequate Evidence: Animal Inadequate Evidence).

IRRITANCY OF PRODUCT: This product may cause mild skin and respiratory irritation and moderate eye irritancy.

SENSITIZATION TO THE PRODUCT: This product is not known to cause sensitization.

## 11. TOXICOLOGICAL INFORMATION (Continued)

### REPRODUCTIVE TOXICITY INFORMATION:

Listed below is information concerning the effects of this product and its components on the human system.

Mutagenicity: This product is not known to cause mutagenic effects.

Teratogenicity: This product is not known to cause teratogenic effects.

Reproductive Toxicity: This product is not known to cause reproductive toxicity effects.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Prolonged contact with this product may cause pre-existing dermatitis to become aggravated. Persons sensitive to pulmonary irritation upon exposure to high concentrations of dust should use appropriate engineering controls or respiratory protection when recharging fire extinguishers.

RECOMMENDATION TO PHYSICIANS: Treat patient symptoms. This product should not cause any notable clinical symptoms.

## 12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: No adverse environmental consequences are expected.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: None currently known.

EFFECT OF CHEMICAL ON AQUATIC LIFE: Not expected to harm aquatic life.

## 13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, Provincial and local regulations. This chemical, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Residue from fires extinguished with this material may be hazardous.

## 14. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Not applicable

HAZARD CLASS NUMBER AND DESCRIPTION: Not applicable

UN IDENTIFICATION NUMBER: Not applicable

PACKING GROUP: Not applicable

DOT LABEL(S) REQUIRED: Not applicable

EMERGENCY RESPONSE GUIDE NUMBER: Not applicable

MARINE POLLUTANT: Not applicable

THIS MATERIAL IS NOT HAZARDOUS AS DEFINED BY TRANSPORT CANADA "TRANSPORTATION OF DANGEROUS GOODS" REGULATIONS.

## 15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: No component of this product is subject to the reporting requirements of Section 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.

SARA Threshold Planning Quantity: Not applicable

TSCA INVENTORY STATUS: All components are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): Not applicable

OTHER FEDERAL REGULATIONS: Not applicable

STATE REGULATORY INFORMATION: Chemicals in this product are covered under specific State regulations, as denoted below:

## 4. FIRST AID MEASURES (Continued)

**EYE EXPOSURE:** If chemical is splashed in eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes.

**INHALATION:** If chemical is inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. If reddening or irritation occurs, victim and rescuers must seek immediate medical attention.

**INGESTION:** If chemical is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTRE FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who can not swallow.

If exposure causes obvious distress, victim(s) and rescuers must be taken for medical attention. Take copy of label and MSDS to physician health professional with victim.

## 5. FIRE FIGHTING MEASURES

**FLASH POINT, C (method):** Not applicable

**AUTOIGNITION TEMPERATURE, C:** Not applicable

**FLAMMABLE LIMITS (in air by volume, %):** Lower (LEL): Not applicable

Upper (UEL): Not applicable

**FIRE EXTINGUISHING MATERIALS:** None. This product is a fire extinguishing agent.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** When involved in a fire, this material may decompose and produce irritating fumes and toxic gases including sulfur oxides, carbon dioxide and carbon monoxide.

**Explosion Sensitivity to Mechanical Impact:** Not sensitive

**Explosion Sensitivity to Static Discharge:** Not sensitive

**SPECIAL FIRE FIGHTING PROCEDURES:** When involved Incipient fire responders should wear eye protection. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment.

### NFPA RANKING



## 6. ACCIDENTAL RELEASE MEASURES

**SPILL AND LEAK RESPONSE:** Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area, protect people, and respond with trained personnel. If it is determined that exposure guidelines for nuisance particulates - 10 mg/m<sup>3</sup> (total particulates) or 5mg/m<sup>3</sup> (respirable particulate) is exceeded, use Level C: triple gloves (rubber gloves with nitrile gloves, over latex gloves), chemically resistant suit and boots, hard hat, and air purifying respirator with a HEPA filter.

Sweep up the spilled solid and place all spill residue in a double plastic bag and seal. Dispose of in accordance with Federal, Provincial and local hazardous waste disposal regulations (see Sections 13).



## 15. REGULATORY INFORMATION (Continued)

Alaska - Designated Toxic and Hazardous Substances: None.

California - Permissible Exposure Limits for Chemical Contaminants: None.

Florida - Substance List: Mica Dust, Ammonium Sulfate.

Illinois - Toxic Substance List: None.

Kansas - Section 302/313 List: None.

Massachusetts - Substance List: Mica Dust, Ammonium Sulfate.

Minnesota - List of Hazardous Substances: None.

Missouri - Employer Information/Toxic Substance List: None.

North Dakota - List of Hazardous

Chemicals, Reportable Quantities None.

Pennsylvania - Hazardous Substance List: None.

Rhode Island - Hazardous Substance List: Mica Dust, Ammonium Sulfate.

Texas - Hazardous Substance List: None.

West Virginia - Hazardous Substance List: None.

Wisconsin - Toxic and Hazardous Substance List: None.

### CALIFORNIA PROPOSITION 65:

No component is listed on the California Proposition 65 lists.

**Labelling:** CAUTION! May cause skin or eye irritation. Avoid contact with skin or eyes. In the event of contact, rinse affected part of your body with water for at least 15 minutes. Seek medical attention if reddening or irritation occurs. Keep container tightly closed. Store in a cool, dry location away from incompatible materials. Clean up spills promptly. This product will not contribute to the intensity of a fire.

**TARGET ORGANS:** Skin, eyes.

**WHIMS SYMBOLS:** Not applicable.

## 16. OTHER INFORMATION

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

## DEFINITION OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

**CAS #** - This is the Chemical Abstract Number Which uniquely identifies each constituent. It is used for computer related searching.

### EXPOSURE LIMITS IN AIR:

**ACGIH** - American Conference of Government Industrial Hygienists, a professional association which establishes exposure limits.

**TLV** - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effects. The duration must be considered, including the 8 hour Time Weighted Average (TWA), the 15 minute Short Term Exposure Limit, and the instantaneous Ceiling Level. Skin absorption effects must also be considered.

**OSHA** - U.S. Occupational Safety and Health Administration.

**PEL** - Permissible Exposure Limit - this exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The **IDLH** Immediately Dangerous to Life and Health level represents a concentration from which one can escape within 30 minutes without suffering escape preventing or permanent injury. The **DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S.

**PEL**. **NIOSH** is the National Institute of Occupational Safety and Health which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). **NIOSH** issues exposure guidelines called Recommended Exposure Levels (RELs). When no exposure guidelines are established, and entry of NE is made for reference.

**FLAMMABILITY LIMITS IN AIR** - Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). **LEL** - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. **UEL** - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

### TOXICOLOGICAL INFORMATION

Possible health hazards as derived from human data, animal studies or from the results of studies with similar compounds are presented.

Definitions of some terms used in this section are:

**LD50** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals.

**LC50** - Lethal Concentration (gases) which kills 50% of the exposed animals.

**ppm** - concentration expressed in parts of material per million parts of air or water.

**mg/m<sup>3</sup>** - concentration expressed in weight of substance per volume of air.

**mg/kg** - quantity of material, by weight, administered to a test subject, based on their body weight in kg.

Data from several sources are used to evaluate the cancer causing potential of the material. The sources are:

**IARC** - the International Agency for Research on Cancer.

**NTP** - the National Toxicology Program.

**RTECS** - the Registry of Toxic Effects of Chemical Substances, OSHA and CAL/OSHA.

**IARC** and **NTP** rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4.

Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include:

**TDLo** - the lowest dose to cause a symptom.

**TDLo, LDLo, and LDo** - the lowest dose to cause death.

### REGULATORY INFORMATION

This section explains the impact of various laws and regulations on the material.

**EPA** is the U.S. Environmental Protection Agency.

**WHMIS** is the Canadian Workplace Hazard Information System.



DOT and CTC are the U.S. Department of Transportation and the Canadian Transportation Commission, respectively.

SARA - Superfund Amendments and Reauthorization Act.

TSCA - the Toxic Substance Control Act.

California Proposition 65 - California Safe Drinking Water Act.

CERCLA - the Comprehensive Environmental Response, Compensation and Liability Act

This section also includes information on the precautionary warnings which appear on the materials package label.

## **FIRE EXTINGUISHER**

### **Cautions and Warnings**

Fire extinguishers are designed and produced for the specific purpose of providing a safe and efficient safety tool to be used only in the fighting of fires. Improper or careless use may cause severe bodily injury and /or property damage.

Contents are under pressure which is necessary to deliver the contained extinguishing agent to the fire source. Please take note of the following safety information:

- Contents under pressure. Do not puncture, incinerate, or discharge into another person's face.
- Do not store at high temperatures above 120 degrees Fahrenheit or 49 degrees Celsius.
- Keep away from children.
- Avoid inhaling the extinguishing agent. Avoid inhaling smoke and fumes - all fires release toxic substances that are harmful. DO NOT remain in a closed area after use; evacuate the area immediately and ventilate thoroughly before re-entering.
- Although extinguishing agents are non toxic when used properly, contact with them may cause irritation to eyes, nose, throat, and other allergic symptoms.

Refer to specific extinguishing agent material safety data sheet for additional information.

**AVOID INHALING SMOKE AND FUMES; ALL FIRES  
RELEASE TOXIC SUBSTANCES THAT ARE HARMFUL.  
DO NOT REMAIN IN CLOSED AREA AFTER USE.  
VENTILATE CLOSED AREAS BEFORE RETURNING.**

## I. PRODUCT IDENTIFICATION

### MANUFACTURER

Exide Corporation  
P.O. Box 14205  
Reading, PA 19612-4205

### CHEMICAL/TRADE NAME (as used on label)

Lead-Acid Battery

### CHEMICAL FAMILY/ CLASSIFICATION

Electric Storage Battery

### FOR INFORMATION

(610) 378-0500  
Environmental Resources Dept.

### DATE REVISED:

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### FOR EMERGENCY

CHEMTREC (800) 424-9300  
24-hour Emergency Response Contact  
Ask for Environmental Coordinator

## II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

		Approximate Air Exposure Limits (ug/m <sup>3</sup> )			
Components	CAS Number	% by Wt.	OSHA	ACGIH	NIOSH
Inorganic compounds of:					
Lead	7439-92-1	53	50	150	100
Antimony	7440-36-0	0.2	500	500	--
Arsenic	7440-38-2	0.003	10	200	--
Calcium	7440-70-2	0.02	--	--	--
Tin	7440-31-5	0.06	2000	2000	--
Electrolyte (sulfuric acid/water/solution)	7664-93-9	30-40	1000	1000	1000
Case Material:					
Polypropylene	9003-07-0	5-6	N/A	N/A	N/A
Hard Rubber	--				
Other:					
Silicon dioxide (gel cell batteries only)	60676-86-0	3-5	N/A	N/A	N/A

NOTE: Inorganic lead and electrolyte (water and sulfuric acid solution) are the primary components of every battery manufactured by Exide Corporation or its subsidiaries. Other ingredients may be present dependent upon battery type. Polypropylene is the principal case material of automotive and commercial batteries.

## III. PHYSICAL DATA - ELECTROLYTE

Boiling Point	203°F-240°F (for S.G. range)	Specific Gravity (H <sub>2</sub> O=1)	1.230 to 1.350
Melting Point	Not Applicable	Vapor Pressure (mm Hg)/77°F	17 to 11 (for S.G. range)
Solubility in Water	100%	Vapor Density (AIR=1)	Greater than 1
Evaporation Rate (Butyl acetate=1)	Less Than 1	% Volatiles by Weight	Not Applicable
Appearance and Odor	A clear liquid with a sharp, penetrating, pungent odor. A battery is a manufactured article; no apparent odor.		

## IV. FIRE AND EXPLOSION HAZARD DATA

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Flash Point: Not Applicable

Flammable Limits: LEL = 4.1% (Hydrogen Gas in air)  
UEL = 74.2%Extinguishing media: CO<sub>2</sub>; foam; dry chemical

Special Fire Fighting Procedures: Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during 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 risk of electric shock even when charging equipment is shut down.

Unusual Fire and Explosion hazards: In operation, batteries generate and release flammable hydrogen gas. They must always be assumed to contain this gas which, 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.

## V. REACTIVITY DATA

Stability: Stable X  
Unstable —

Conditions to Avoid: Prolonged overcharge at high current; sources of ignition.

Incompatibility: (materials to avoid)

Electrolyte (Water and Sulfuric Acid Solution): 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.

Hazardous Decomposition Products:

Electrolyte (Water and Sulfuric Acid Solution): Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen.

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.

## VI. HEALTH HAZARD DATA

Routes of Entry:

Electrolyte (Water and Sulfuric Acid Solution): Harmful by all routes of entry.

Lead compounds: Hazardous exposure can occur only when product is heated above the melting point, oxidized or otherwise processed or damaged to create dust, vapor or fume.

Inhalation:

Electrolyte (Water and Sulfuric Acid Solution): 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.

## VI. HEALTH HAZARD DATA (CONTINUED)

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**Ingestion:**

**Electrolyte (Water and Sulfuric Acid Solution):** 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 lead rapidly to systemic toxicity.

**Skin Contact:**

**Electrolyte (Water and Sulfuric Acid Solution):** Severe irritation, burns and ulceration.

**Lead compounds:** Not absorbed through the skin.

**Eye Contact:**

**Electrolyte (Water and Sulfuric Acid Solution):** Severe irritation, burns, cornea damage, blindness.

**Lead compounds:** May cause eye irritation.

**Effects of Overexposure - Acute:**

**Electrolyte (Water and Sulfuric Acid Solution):** Severe skin irritation, damage to cornea may cause blindness, upper respiratory irritation.

**Lead compounds:** Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability.

**Effects of Overexposure - Chronic:**

**Electrolyte (Water and Sulfuric Acid Solution):** Possible erosion of tooth enamel; inflammation of nose, throat and bronchial tubes.

**Lead compounds:** Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in both males and females.

**Carcinogenicity:**

**Electrolyte (Water and Sulfuric Acid Solution):** 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 sulfuric acid solutions in static liquid state or to electrolyte in batteries. Batteries subjected to abusive charging at excessively high currents for prolonged periods of time without vent caps in place may create a surrounding atmosphere of the offensive strong inorganic acid mist containing sulfuric acid.

**Lead compounds:** Listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present.

**Arsenic:** Listed by National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

**Medical Conditions Generally Aggravated by Exposure:**

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of electrolyte (water and sulfuric acid solution) with skin may aggravate skin diseases such as eczema and contact dermatitis. Contact of electrolyte (water and sulfuric acid solution) with eyes may damage cornea and/or cause blindness. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.

## Emergency and First Aid Procedures:

## Inhalation:

Electrolyte (Water and Sulfuric Acid Solution): Remove to fresh air immediately. If breathing is difficult, give oxygen.

Lead: Remove from exposure, gargle, wash nose and lips; consult physician.

## Ingestion:

Electrolyte (Water and Sulfuric Acid Solution): Give large quantities of water; do not induce vomiting; consult physician.

Lead: Consult physician immediately.

## Skin:

Electrolyte (Water and Sulfuric Acid Solution): Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes.

Lead: Wash immediately with soap and water.

## Eyes:

Electrolyte (Water and Sulfuric Acid Solution) and lead: Flush immediately with large amounts of water for at least 15 minutes; consult physician immediately.

## VII. PRECAUTIONS FOR SAFE HANDLING AND USE

## Handling and Storage:

Store batteries under roof in cool, dry, well-ventilated areas which are separated from incompatible materials and from activities which may create flames, sparks or heat. Store on smooth, impervious surfaces which are provided with measures for liquid containment in the event of electrolyte spills. Keep away from metallic objects which could bridge the terminals on a battery and create a dangerous short-circuit. Handle carefully and avoid tipping, which may allow electrolyte leakage. Single batteries pose no risk of electric shock but there may be increasing risk of electric shock from strings of connected batteries exceeding three 12-volt units.

## Charging:

There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether being charged or not. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.

## Spill or Leak Procedures:

Stop flow of material, contain/absorb small spills with dry sand, earth, vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of unneutralized acid to sewer. Neutralized acid must be managed in accordance with approved local, state and federal requirements. Consult state environmental agency and/or federal EPA.

**Waste Disposal Methods:**

Spent batteries: Send to secondary lead smelter for recycling.

**Electrolyte:**

Place neutralized slurry into sealed acid resistant containers and dispose of as hazardous waste, as applicable. Large water-diluted spills, after neutralization and testing, should be managed in accordance with approved local, state and federal requirements. Consult state environmental agency and/or federal EPA.

**Precautionary Labelling:**

POISON - CAUSES SEVERE BURNS

DANGER - EXPLOSIVE GASES

CORROSIVE - CONTAINS SULFURIC ACID

KEEP AWAY FROM CHILDREN

**VIII. CONTROL MEASURES**

**Engineering Controls:**

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant.

**Work Practices:**

Handle batteries cautiously, do not tip to avoid spills. Make certain vent caps are on securely. Avoid bodily contact with internal components. Wear protective clothing, eye and face protection, when filling or handling batteries.

**Respiratory Protection:**

None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

**Protective gloves:**

Rubber or plastic acid-resistant gloves with elbow-length gauntlet.

**Eye Protection:**

Chemical goggles or face shield.

**Other Protection:**

Acid-resistant apron. Under severe exposure or emergency conditions, wear acid-resistant clothing, gloves and boots.

**Emergency Flushing:**

In areas where water and sulfuric acid solutions are handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.