# MATERIAL SAFETY DATA SHEET

**Product Identity:** Valve Regulated Lead Acid Battery - *DISCOVER®*
**Name and Address:** Uniwell Battery, Suite 880-999 W. Broadway, Vancouver, BC V5Z 1K5 CANADA
**24-Hour Emergency Response Contact:** INFOTRAC U.S.A. , 1-800-535-5053
**Other Information Calls:** 1-888-AMP-HOUR

## 1. HAZARDOUS COMPONENTS

| Components | % Weight | TLV | LD50 Oral | LC50 Inhalation | LC50 Contact |
|---|---|---|---|---|---|
| Lead (Pb,PbO□PbSO | about 70% | N/A | (500)mg/kg | N/A | N/A |
| Sulfuric Acid | about 20% | 1mg/m³ | (2.140)mg/kg | N/A | N/A |
| Fiber Glass Separat | about 2% | N/A | N/A | N/A | N/A |
| ABS (Case & Cover | about 8% | N/A | N/A | N/A | N/A |

## 2. PHYSICAL DATA

| Components | Density | Melting Point | Solubility (H: 0) | Odor | Appearance |
|---|---|---|---|---|---|
| Lead | 11.34 | 327.4°C (Boiling) | None | None | Siler-Grey Metal |
| Lead Sulfate | 6.2 | 1070°C (Boiling) | 40mg/l (15°C) | None | White Powder |
| Lead Dioxide | 9.4 | 290°C (Boiling) | None | None | Brown Powder |
| Sulfuric Acid | about 1.3 | about 114°C (Boiling) | 100% | Acidic | Clear Colorless Liquid |
| Fiber Glass Separat | N/A | N/A | Slight | Toxic | White Fibrous Glass |
| ABS (Case & Cover | N/A | N/A | None | None | Solid |

## 3. FLAMMABILITY DATA

| Components | Flash Point | Explosive Limits | Comments |
|---|---|---|---|
| Lead | None | None | |
| Sulfuric Acid | None | None | |
| Hydrogen | - | 4%-74.2% | Sealed batteries can emit hydrogen only if overcharged (float voltage>2.3vpc 25°C) |
| Fiber Glass Separator | N/A | N/A | Toxic vapor may be released. In case of fire; wear self-contained breathing apparatus |
| ABS | None | N/A | Temperature over 200°C may release gases |

## 4. FIRST AID: Sulfuric Acid Precautions

| | |
|---|---|
| **Inhalation** | Move to ventilated area. Obtain medical attention |
| **Eyes** | Wash the eyes with copious quantities of running water for 15 minutes. Obtain medical attention |
| **Skin** | Flush area with large amounts of running water. Remove contaminated clothing and obtain medical attention |
| **Ingestion** | Wash out mouth with running water. Do not induce vomiting. Call Physician. |

## 5. REACTIVITY DATA

| Component | *Sulfuric Acid* |
|---|---|
| **Stability** | Stable at all temperatures |
| **Polymerization** | Will not polymerize |
| **Incompatibility** | Reactive metals, strong bases, most organic compounds |
| **Decomposition products** | Sulfuric dioxide, trioxide, hydrogen sulfide, hydrogen |
| **Conditions to avoid** | Keep away from flames during and immediately after charging. Combustion or overcharging may create or liberate toxic and hazardous gases and liquid including hydrogen, sulfuric acid mist, sulfur dioxide, sulfur trioxide and sulfuric acid<br>Avoid mixing acid with other chemicals |

## 6. SPILL OR LEAK PROCEDURES

| | |
|---|---|
| **Step to take in case of leak or spill** | Wear protective clothing, Ventilate enclosed areas. Dike to contain contaminated material and liquids. Limit site access to emergency responses. Neutralize with sodium bicarbonate, soda ash, lime, and other neutralizing agents. |
| **Waste disposal method** | Return whole scrap batteries to distributor, manufacturer or lead smelter for recycling. For neutralized spills, place residue into containers with absorbent material, sand or earth for disposal. Contact local and/or state environmental officials for proper disposal requirements. |

## 7. PROTECTION

| Exposure site | Protection | Comments |
|---|---|---|
| Skin | Rubber Gloves, Apron | Protective equipment must be worn if the battery is cracked or damaged. A respirator should be worn during certain operations if the TLV is exceeded. |
| Respiratory | Respirator | |
| Eyes | Safety Goggles, Face shield | |

## 8. ELECTRICAL SAFETY

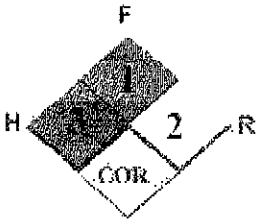
Due to battery's low internal resistance and high power density, high level of short circuit current could be developed across the battery terminals. Do not rest tools or cables on the battery. Use the insulated tools only. Follow all installation instructions and diagram when installing or maintaining battery systems.

## 9. HEALTH HAZARD DATA

| | |
|---|---|
| Lead | The toxic effects of lead are accumulated and slow to appear. It affects the kidneys, reproductive and central nerves system. The Symptoms of Lead overexposure are vomiting, headaches, stomach pain,<br>Exposure to lead from a battery most often occurs during lead reclaim operations through the breathing or ingestion of lead dust or fumes.<br>THIS DATA MUST BE PASSED TO ANY SCRAP DEALER OR SMELTER WHEN A BATTERY IS RESOLD. |
| **Sulfuric Acid** | Sulfuric Acid is a strong corrosive; contact with acid can cause severe burns on the skin and eyes.<br>Acid can be released if the battery case is damaged. |

Trojan BATTERY COMPANY

HAZARD RATING




# TROJAN BATTERY COMPANY
## LEAD / ACID BATTERY

# MATERIAL SAFETY DATA SHEET

## SECTION 1-- CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| MANUFACTURER'S NAME: TROJAN BATTERY COMPANY | EMERGENCY TELEPHONE NO. CHEMTREC 800-424-9300 |
| ADDRESS: 12380 CLARK ST., SANTA FE SPRINGS, CA 90670 | OTHER INFORMATION CALLS: 562.236-3000 800-423-6569 |
| PERSON RESPONSIBLE FOR PREPARATION: Ismael Pedroza, Jr | Revision Date: November 07, 2007 |

## SECTION 2 -- COMPOSITION/INFORMATION ON INGREDIENTS

| C.A.S. | PRINCIPAL HAZARDOUS COMPONENT(S) (chemical & common name(s) | Hazard Category | % | ACGIH TLV | OSHA PEL-TWA |
|---|---|---|---|---|---|
| 7439-92-1 | Lead/Lead Oxide/Lead Sulfate | Acute-Chronic | 60 - 97% | 0.05 mg/m$^3$ | 0.05 mg/m$^3$ |
| 7440-36-0 | Antimony | Chronic | 1.5 - 4% | 0.5 mg/m$^3$ | 0.5 mg/m$^3$ |
| 7440-38-2 | Arsenic | Acute-Chronic | < 1% | 0.01 mg/m$^3$ | 0.01mg/m$^3$ |
| 7664-93-9 | Sulfuric Acid (Battery Electrolyte) | Reactive-Oxidizer Acute-Chronic | 10 - 38% | 1.0 mg/m$^3$ | 1.0 mg/m$^3$ |
| 7440-70-2 | Calcium | Reactive | < 0.15% | Not established | Not established |
| 7440-31-5 | Tin | Chronic | < 0.3% | 2.0 mg/m$^3$ | Not established |

NOTE: PEL's for individual states may differ from OSHA PEL's. Check with local authorities for the applicable state PEL's.
OSHA - Occupational Safety and Health Administration; ACGIH - American Conference of Governmental Industrial Hygienists; NIOSH - National Institute for Occupational Safety and Health.

COMMON NAME: (Used on label)
(Trade Name & Synonyms): Lead/Acid Storage Battery; Chemical Family: Toxic and Corrosive Material Mixture
Chemical Name: Lead/Acid Storage Battery; Formula: Lead and Acid (electrolyte)

## SECTION 3 -- HAZARD IDENTIFICATION

**Signs and Symptoms of Exposure**

1 Acute Hazards

Do not open battery. Avoid contact with internal components. Internal components include lead and liquid electrolyte.

Electrolyte - Electrolyte is corrosive and contact may cause skin irritation and chemical burns. Electrolyte causes severe irritation and burns of eyes, nose and throat. Ingestion can cause severe burns and vomiting.

Lead - Direct skin or eye contact may cause local irritation. Inhalation or ingestion of lead dust or fumes may result in headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia and leg, arm and joint pain.

2 Subchronic and Chronic Health Effects

Electrolyte - Repeated contact with sulfuric acid battery electrolyte fluid may cause drying of the skin which may result in irritation, dermatitis, and skin burns. Repeated exposure to sulfuric acid mist may cause erosion of teeth, chronic eye irritation and/or chronic inflammation of the nose, throat and lungs.

Lead - Prolonged exposure may cause central nervous system damage, gastrointestinal disturbances, anemia, wrist-drop and kidney dysfunction. Pregnant women should be protected from excessive exposure to prevent lead from crossing the placental barrier and causing infant neurological disorders.

**California Proposition 65 Warning:** Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm, and during charging, strong inorganic acid mists containing sulfuric acid are evolved, a chemical known to the State of California to cause cancer. Wash hands after handling.

**Medical Conditions Generally Aggravated by Exposure**

If battery is broken or material is spilled, then persons with the following medical conditions must take precautions: pulmonary edema, bronchitis, emphysema, dental erosion and tracheobronchitis.

**Routes of Entry**

Inhalation - YES; Ingestion - YES; Eye Contact - YES; Skin Contact - YES

| Chemical(s) Listed as Carcinogen or potential Carcinogen | Proposition 65 YES | National Toxicology Program - YES | I.A.R.C. Monographs - YES | OSHA - NO | EPA CAG - YES | NIOSH - YES |
|---|---|---|---|---|---|---|

## SECTION 4 -- FIRST AID MEASURES

| | |
|---|---|
| Emergency and First Aid Procedures | Contact with internal components if battery is opened, broken or spilled. |
| 1. Inhalation | Remove to fresh air and provide medical oxygen/CPR if needed. Obtain medical attention. |
| 2. Eyes | Immediately flush with water for at least 15 minutes, hold eyelids open. Obtain medical attention. |
| 3. Skin | Flush contacted area with large amounts of water for at least 15 minutes. Remove contaminated clothing and obtain medical attention if necessary. |
| 4. Ingestion | Do not induce vomiting. If conscious drink large amounts of water/milk. Obtain medical attention. Never give anything by mouth to an unconscious person. |

## SECTION 5 - FIREFIGHTING MEASURES

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Flash Point | Not Applicable | Flammable Limits in Air % by Volume (When charging) | Hydrogen ($H_2$) | Lower 4.1% | Upper 74.2% | Extinguisher Media | Class ABC, $CO_2$, Halon | Auto-Ignition Temperature | Polypropylene 675° F |

| | |
|---|---|
| Special Fire Fighting Procedures | Lead-acid batteries do not burn or burn with difficulty. Do not use water on fires where molten metal is present. Extinguish fire with agent suitable for surrounding combustible materials. Cool exterior of battery if exposed to fire to prevent rupture. The acid mist and vapors generated by heat or fire are corrosive. Use NIOSH approved self-contained breathing apparatus (SCBA) and full protective equipment operated in positive-pressure mode. |
| Unusual Fire and Explosion Hazards | Hydrogen gas and sulfuric acid vapors are generated upon overcharge and polypropylene case failure. Ventilate charging areas as per ACGIH Industrial Ventilation : A Manual of Recommended Practice and National Fire Code, 1980 Vol 1, P 12, 8-9, 10. Hydrogen gas may be flammable or explosive when mixed with air, oxygen, chlorine. Avoid open flames/sparks/other sources of ignition near battery. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries and do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries. SULFURIC ACID REACTS VIOLENTLY WITH WATER/ORGANICS. |

## SECTION 6 -- ACCIDENTAL RELEASE MEASURES

**Procedures for Cleanup:** Stop release, if possible. Avoid contact with any spilled material. Contain spill, isolate hazard area, and deny entry. Limit site access to emergency responders. Neutralize with sodium bicarbonate, soda ash, lime or other neutralizing agent. Place battery in suitable container for disposal. Dispose of contaminated material in accordance with applicable local, state and federal regulations. Sodium bicarbonate, soda ash, sand, lime or other neutralizing agent should be kept on-site for spill remediation.

**Personal Precautions:** Acid resistant aprons, boots and protective clothing. ANSI approved safety glasses with side shields/face shield recommended. Ventilate enclosed areas.

**Environmental Precautions:** Lead and its compounds and sulfuric acid can pose a severe threat to the environment. Contamination of water, soil, and air should be prevented.

## SECTION 7 -- HANDLING AND STORAGE

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|---|---|
| Precautions to be Taken in Handling and Storage | Keep away from flames during and immediately after charging. Combustion or overcharging may create or liberate toxic and hazardous gases and liquids including hydrogen, sulfuric acid mist, sulfur dioxide, sulfur trioxide, stibine, arsine and sulfuric acid. Store batteries in cool, dry, well ventilated area. Do not short circuit battery terminals, or remove vent caps during storage or recharging. Protect battery from physical damage. |
| Other Precautions | GOOD PERSONAL HYGIENE AND WORK PRACTICES ARE MANDATORY. Refrain from eating, drinking or smoking in work areas. Thoroughly wash hands, face, neck, and arms before eating, drinking or smoking. Launder soiled clothing before reuse. Emptied batteries contain hazardous sulfuric acid residue. |

## SECTION 8 -- EXPOSURE CONTROLS AND PERSONAL PROTECTION

| | | | | | |
|---|---|---|---|---|---|
| Respiratory Protection (Specify Type) | Acid/gas NIOSH approved respirator is required when the PEL is exceeded or employee experiences respiratory irritation. When exposure levels are unknown or when firefighting, wear a self-contained breathing apparatus with a full facepiece operated in a positive pressure mode. | | | | |
| Ventilation | Must be provided when charging in an enclosed area. Change air every 15 min. | Local Exhaust | When PEL is exceeded | Mechanical (General) | Normal mechanical ventilation recommended for stationary applications. |
| Protective Gloves | Wear rubber or plastic acid resistant gloves with elbow length gauntlet when filling batteries. | Eye Protection | ANSI approved safety glasses with side shields/face shield recommended. Safety goggles. | | |
| Other Protective Clothing or Equipment | Ventilation as described in the Industrial Ventilation Manual produced by the American Conference of Governmental Industrial Hygienists, shall be provided in areas where exposures are above the PEL or TLV specified by OSHA or other local, state and federal regulations. Acid-resistant rubber or plastic apron, boots and protective clothing. Safety shower and eyewash. | | | | |

## SECTION 9 -- PHYSICAL AND CHEMICAL PROPERTIES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Boiling Point | Electrolyte Approx. 235° F | Vapor Pressure | Electrolyte 1 mm Hg @ 145.8° F | Specific Gravity | Electrolyte ($H_2O$ = 1) 1.250 - 1.320 pH < 2 | Melting Point | Polypropylene > 320° F |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Percent Volatile by Volume (%) | Not Applicable | Vapor Density | Hydrogen (Air = 1) : 0.069<br>Electrolyte (Air = 1) : 3.4 | At STP | | Evaporation Rate | Not Applicable |

| | | | |
|---|---|---|---|
| Solubility in Water | Electrolyte: 100% Soluble | Reactivity in Water | Electrolyte - water reactive (1) |

| | |
|---|---|
| Appearance and Odor | Battery: Polypropylene or hard rubber case, solid.<br>Lead: Gray, metallic, solid<br>Electrolyte: Liquid, colorless, oily fluid; nuisance odor when hot or charging battery. |

## SECTION 10 -- STABILITY AND REACTIVITY

| | | | |
|---|---|---|---|
| Stability | Unstable ☐<br>Stable ☒ | Conditions to Avoid | High temperatures - cases decompose at >320°F.<br>Avoid overcharging and smoking, or sparks near battery surface and rapid overcharge. |
| Incompatibility (Materials to Avoid) | Sparks, Open flames, Keep battery case away from strong oxidizers. | | |
| Hazardous Decomposition Products | An explosive hydrogen/oxygen mixture within the battery may occur during charging. Combustion can produce carbon dioxide ($CO_2$) and carbon monoxide (CO). Molten metals produce fumes and/or vapor that may be toxic or respiratory irritants. | | |
| Hazardous Polymerization | May Occur ☐<br>Will Not Occur ☒ | Do not overcharge | |

## SECTION 11 -- TOXICOLOGICAL INFORMATION

**GENERAL:** The primary routes of exposure to lead are ingestion or inhalation of dust and fumes.

**ACUTE:**
**INGESTION/INHALATION:** Exposure to lead and its compounds may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia, and pain in the legs, arms and joints. Kidney damage, as well as anemia, can occur from acute exposure.

**CHRONIC:**
**INHALATION/INGESTION:** Prolonged exposure to lead and its compounds may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia, and wrist drop. Symptoms of central nervous system damage include fatigue, headaches, tremors, hypertension, hallucinations, convulsions and delirium. Kidney dysfunction and possible injury has also been associated with chronic lead poisoning. Chronic over-exposure to lead has been implicated as a causative agent for the impairment of male and female reproductive capacity, but there is, at present, no substantiation of the implication. Pregnant women should be protected from excessive exposure. Lead can cross the placental barrier and unborn children may suffer neurological damage or developmental problems due to excessive lead exposure in pregnant women.

## SECTION 12 -- ECOLOGICAL INFORMATION

In most surface water and groundwater, lead forms compounds with anions such as hydroxides, carbonates, sulfates, and phosphates and precipitates out of the water column. Lead may occur as sorbed ions or surface coatings on sediment mineral particles or may be carried in colloidal particles in surface water. Most lead is strongly retained in soil, resulting in little mobility. Lead may be immobilized by ion exchange with hydrous oxides or clays or by chelation with humic or fulvic acids in the soil. Lead (when in the dissolved phase) is bio-accumulated by plants and animals, both aquatic and terrestrial.

## SECTION 13 -- DISPOSAL CONSIDERATIONS

| | |
|---|---|
| Waste Disposal Methods | Lead acid batteries are completely recyclable. Return whole scrap batteries to distributor, manufacturer or lead smelter for recycling. For information on returning batteries to Trojan Battery Company for recycling call 800-423-6569. For neutralized spills, place residue in acid-resistant containers with sorbent material, sand or earth and dispose of in accordance with local, state and federal regulations for acid and lead compounds. Contact local and/or state environmental officials regarding disposal information. |

## SECTION 14 -- TRANSPORT INFORMATION

U.S. DOT PROPER SHIPPING NAME: Batteries, wet, filled with acid
U.S. DOT HAZARD CLASS: 8
U.S. DOT ID NUMBER: UN 2794
U.S. DOT PACKING GROUP: III
U.S. DOT LABEL: Corrosive

IMO PROPER SHIPPING NAME: Batteries, wet, filled with acid
IMO REGULATION PAGE NUMBER: 8120
IMO U.N. CLASS: 8
IMO U.N. NUMBER: UN 2794
IMO PACKING GROUP: III
IMO LABEL: Corrosive
IMO VESSEL STOWAGE: A

IATA PROPER SHIPPING NAME: Batteries, wet, filled with acid
IATA U.N. CLASS: 8
IATA U.N. NUMBER: UN 2794
IATA PACKING GROUP: III
IATA LABEL: Corrosive

## SECTION 15 -- REGULATORY INFORMATION

| | |
|---|---|
| U.S. Hazardous Under Hazard Communication Standard: | Lead - YES<br>Sulfuric Acid - YES<br>Antimony - YES<br>Arsenic - YES |
| Ingredients Listed on TSCA Inventory: | YES |

| | | |
|---|---|---|
| CERCLA Section 304 Hazardous Substances: | Lead – YES | RQ: NA* |
| | Sulfuric Acid – YES | RQ: 1000 pounds |
| | Antimony - YES | RQ: 5000 pounds |
| | Arsenic – YES | RQ: 1 pound |

*Reporting not required when diameter of the pieces of solid metal released is equal to or exceeds 100 micrometers

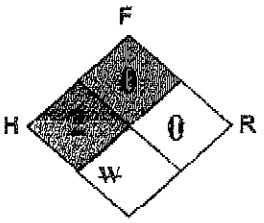
| | |
|---|---|
| EPCRA Section 302 Extremely Hazardous Substance: | Sulfuric acid YES |
| EPCRA Section 313 Toxic Release Inventory: | Lead - CAS NO 7439-92-1 |
| | Sulfuric Acid - CAS NO: 7664-93-9 |
| | Antimony - CAS NO: 7440-36-0 |
| | Arsenic - CAS NO. 7440-38-2 |

## SECTION 16 -- OTHER INFORMATION

THE INFORMATION ABOVE IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, TROJAN BATTERY COMPANY MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES. ALTHOUGH REASONABLE PRECAUTIONS HAVE BEEN TAKEN IN THE PREPARATION OF THE DATA CONTAINED HEREIN, IT IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION. THIS MATERIAL SAFETY DATA SHEET PROVIDES GUIDELINES FOR THE SAFE HANDLING AND USE OF THIS PRODUCT; IT DOES NOT AND CANNOT ADVISE ON ALL POSSIBLE SITUATIONS. THEREFORE, YOUR SPECIFIC USE OF THIS PRODUCT SHOULD BE EVALUATED TO DETERMINE IF ADDITIONAL PRECAUTIONS ARE REQUIRED

Form MSDS Rev. 11/07/07

Hazard Rating




# TROJAN BATTERY COMPANY
# LEAD PASTED PLATES
# MATERIAL SAFETY DATA SHEET

## SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

| | |
|---|---|
| MANUFACTURER'S NAME: TROJAN BATTERY COMPANY | EMERGENCY TELEPHONE NO.: CHEMTREC 800/424-9300 |
| ADDRESS: 12380 CLARK ST., SANTA FE SPRINGS, CA 90670 | OTHER INFORMATION CALLS: 562-236-3000 800-423-5569 |
| PERSON RESPONSIBLE FOR PREPARATION: Ismael Pedroza, Jr. – Sr. Manger TBC, Safety & Environmental | Revised Date: March 31, 2005 |

## SECTION 2 -- COMPOSITION/INFORMATION ON INGREDIENTS

| C.A.S. | PRINCIPAL HAZARDOUS COMPONENT(S) (chemical & common name(s) | Hazard Category | % Weight | ACGIH TLV - mg/m³ | OSHA PEL/TWA - mg/m³ |
|---|---|---|---|---|---|
| 7439-92-1 | Grid Containing Lead | Acute-Chronic | 40-50 | 0.05 mg/m³ | 0.05 mg/m³ |
| 7440-36-0 | Antimony | Chronic | 0-7.0 | 0.5 | 0.5 |
| 7440-31-5 | Tin | Chronic | 0-3.0 | 2 | 2 |
| 7440-70-2 | Calcium (lead calcium alloy) | Reactive | 0-0.5 | Not Established | Not Established |
| 7440-38-2 | Arsenic (inorganic) | Acute-Chronic | 0-0.2 | 0.01 | 0.05 |
| None assigned | Paste Containing Lead Oxide (Litharge) | Acute-Chronic | 50-60 | 0.05 (lead) | 0.05 (lead) |
| 7446-14-2 | Lead Sulfate | Acute-Chronic | 5-20 | Not Established | 0.05 mg/m³ (as lead) |
| 1333-86-4 | Carbon Black | Chronic | <0.2 | 3.5 | 3.5 |

Note: PEL's for individual states may differ from OSHA's PEL's. Check with local authorities for the applicable state PEL's.

COMMON NAME: (Used on label) (Trade Name & Synonyms) Pasted Plates

Chemical Family: Toxic Mixture

Chemical Name: Lead, Pasted Plates

Formula: Mixture

## SECTION 3 – HAZARD IDENTIFICATION

| | | | | | | |
|---|---|---|---|---|---|---|
| Signs and Symptoms of Exposure | 1. Acute Hazards | Direct skin or eye contact may cause local irritation. Inhalation or ingestion of lead dust or fumes may result in headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia and leg, arm and joint pain. | | | | |
| | 2. Sub-Chronic and Chronic Health Effects | Prolonged exposure may cause central nervous system damage, gastrointestinal disturbances, anemia, wrist-drop and kidney dysfunction. Pregnant women should be protected from excessive exposure to prevent lead from crossing the placental barrier and causing infant neurological disorders.<br>California Proposition 65 Warning: This product contains lead and lead compounds, which are chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. | | | | |
| Medical Conditions Generally Aggravated by Exposure | Pulmonary edema, bronchitis, emphysema, dental erosion and tracheobronchitis. | | | | | |
| Routes of Entry | Inhalation- YES<br>Ingestion – YES | Eye Contact- YES | | Skin Absorption- NO | | |
| Chemical(s) Listed as Carcinogen or potential Carcinogen | Proposition 65 - YES | National Toxicology Program - YES | I.A.R.C. Monographs - YES | O.S.H.A. - NO | EPA CAG - YES | N.I.O.S.H. - YES |

## SECTION 4 - FIRST AID MEASURES

| Emergency and First Aid Procedures | Contact with Lead/Pasted Plates |
|---|---|
| 1. Inhalation | Move to ventilated area. Obtain medical attention if experiencing effects of overexposure. |
| 2. Eyes | Flush the eyes with copious quantities of cool running water for 15 minutes. Obtain immediate medical attention. |
| 3. Skin | Wash area thoroughly with soap and water. |
| 4. Ingestion | Do not induce vomiting. If conscious drink large amounts of water/milk. Obtain medical attention. Never give anything by mouth to an unconscious person. |
| 5. Lead Exposure | May cause lassitude, constipation, anemia, nausea, vomiting, paralysis, and central nervous system depression. Greatest exposure comes from dust in the air and on hands when packing/unpacking, and during lead acid battery manufacturing. |

## SECTION 5 – FIRE-FIGHTING MEASURES

| Flash Point – Not Applicable | Flammable Limits in Air % by Volume | Lower N/A | Upper N/A | Extinguishing Media – Dry Chemical or $CO_2$ | Auto-Ignition Temperature - Not Applicable |
|---|---|---|---|---|---|
| Special Fire Fighting Procedures | Do not use water on fires where molten metal is present. Use NIOSH/MSHA approved SCBA and full body protective equipment operated in positive pressure mode. | | | | |
| Unusual Fire and Explosion Hazards | Molten metals produce fumes and/or vapor that may be toxic or respiratory irritants. Product can react vigorously with strong oxidizing agents. | | | | |

## SECTION 6 – ACCIDENTAL RELEASE MEASURES

Procedures for Cleanup: Avoid contact with any spilled material. Contain spill, isolate hazard area, and deny entry. Limit site access to emergency responders. Material should be vacuumed with HEPA filter or wet swept and stored in dry containers for later disposal. Do not use compressed air or dry sweeping as a means of cleaning.

Personal Precautions: Wear protective clothing and appropriate NIOSH/MSHA approved respirator. ANSI approved safety glasses with side shields recommended.

Environmental Precautions: Lead and its compounds are a severe threat to the environment. Contamination of water, soil and air should be prevented.

## SECTION 7 – HANDLING AND STORAGE

| Precautions to be Taken in Handling and Storage | Store away from reactive materials, open flames and sources of ignition as defined in Section 10 – Stability and Reactivity. |
|---|---|
| Other Precautions | GOOD PERSONAL HYGIENE AND WORK PRACTICES ARE MANDATORY. Refrain from eating, drinking or smoking in work areas. Thoroughly wash hands, face, neck and arms before eating, drinking and smoking. Work clothes and equipment should remain in designated lead contaminated areas, and never taken home or laundered with personal clothing. Wash soiled clothing, work clothes, and equipment before reuse. |

## SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

| Respiratory Protection | NIOSH approved respirator is required when the PEL is exceeded or employee experiences respiratory irritation. When exposure levels are unknown or when fire-fighting, wear a self-contained breathing apparatus with a full face-piece operated in positive pressure mode. | | |
|---|---|---|---|
| Ventilation | Use adequate general or local exhaust ventilation to keep airborne concentration below the PEL. | | |
| Protective Gloves | Rubber Gloves | Eye Protection | ANSI approved safety glasses with side shields recommended. |
| Other Protective Clothing or Equipment | Aprons, boots and protective clothing appropriate for an industrial environment. Ventilation, as described in the Industrial Ventilation Manual produced by the American Conference of Governmental Industrial Hygienists, shall be provided in areas where exposures are above the PEL or TLV specified by OSHA or other local, state and federal regulations. Safety shower and eyewash. | | |

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

| Boiling Point: Not Applicable | Vapor Pressure: Not Applicable | Specific Gravity: 7.4 g/ml | Melting Point: 550°F |
|---|---|---|---|
| Percent Volatile By Volume: Not Applicable | Vapor Density: Not Applicable | | Evaporation Rate: Not applicable |
| Solubility in water: 33 mg/l | | Reactivity in Water: None | |
| Appearance and Odor: Lead: Gray metallic, solid<br>Lead Oxide: Orange or gray paste<br>No apparent odor | | Product manufactured by pasting lead oxide over lead frame (grid). | |

## SECTION 10 – STABILITY AND REACTIVITY

| | |
|---|---|
| Stability: Stable | Conditions to Avoid: Intense Heat; avoid high concentrations of corrosives/acids. |
| Incompatibility (Materials to Avoid) | Strong oxidizers and this product may liberate hydrogen gas. |
| Hazardous Decomposition Products | Molten metals produce fumes and/or vapors that may be toxic or respiratory irritants. |
| Hazardous Polymerization | Hazardous Polymerization has not been reported. |

## SECTION 11 - TOXICOLOGICAL INFORMATION

GENERAL: The primary routes of exposure are ingestion or inhalation of dust.

ACUTE:
INHALATION/INGESTION: Exposure to lead and its compounds may cause headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia, and pain in the legs, arms and joints. Kidney damage, as well as anemia, can occur from acute exposure.

CHRONIC:
INHALATION/INGESTION: Prolonged exposure to lead and its compounds may produce many of the symptoms of short-term exposure and may also cause central nervous system damage, gastrointestinal disturbances, anemia, and wrist drop. Symptoms of central nervous system damage include fatigue, headaches, tremors, hypertension, hallucination, convulsions and delirium. Kidney dysfunction and possible injury has also been associated with chronic lead poisoning. Chronic overexposure to lead has been implicated as a causative agent for the impairment of male and female reproductive capacity, but there is at present, no substantiation of the implication. Pregnant women should be protected from excessive exposure. Lead can cross the placental barrier and unborn children may suffer neurological damage or developmental problems due to excessive lead exposure in pregnant women.

## SECTION 12 - ECOLOGICAL INFORMATION

In most surface water and groundwater, lead forms compounds with anions such as hydroxides, carbonates, sulfates, and phosphates, and precipitates out of the water column. Lead may occur as sorbed ions or surface coatings on sediment mineral particles or may be carried in colloidal particles in surface water. Most lead is strongly retained in soil, resulting in little mobility. Lead may be immobilized by ion exchange with hydrous oxides or clays or by chelation with humic or fulvic acids in the soil. Lead (dissolved phase) is bioaccumulated by plants and animals, both aquatic and terrestrial.

## SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSE IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS FOR LEAD AND LEAD COMPOUNDS.

## SECTION 14 - TRANSPORT INFORMATION

U.S. DOT PROPER SHIPPING NAME: RQ, Environmentally Hazardous Substances, solid, n.o.s.
U.S. DOT HAZARD CLASS: 9
U.S. DOT ID NUMBER: UN3077
U.S. DOT PACKING GROUP: III
U.S. DOT LABEL: Class 9

## SECTION 15 - REGULATORY INFORMATION

U.S. HAZARDOUS UNDER HAZARD COMMUNICATION STANDARD:

LEAD – YES
ANTIMONY – YES
ARSENIC – YES
LEAD SULFATE - YES

INGREDIENTS LISTED ON TSCA INVENTORY: YES
CERCLA SECTION 304 HAZARDOUS SUBSTANCES:

LEAD – YES — RQ: REPORTING NOT REQUIRED WHEN DIAMETER OF THE PIECES OF SOLID METAL RELEASED IS EQUAL TO OR EXCEEDS 100 µm (micrometer).

ANTIMONY – YES — RQ: 5000 POUNDS
ARSENIC – YES — RQ: 1 POUND
LEAD SULFATE –YES — RQ: 10 POUNDS

EPCRA SECTION 313 TOXIC RELEASE INVENTORY:

LEAD – CAS NO: 7439-92-1
ANTIMONY – CAS NO: 7440-36-0
ARSENIC – CAS NO: 7440-38-2
LEAD SULFATE – CAS NO. 7446-14-2

## SECTION 16 - OTHER INFORMATION

THE INFORMATION ABOVE IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, TROJAN BATTERY COMPANY MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES. ALTHOUGH REASONABLE PRECAUTIONS HAVE BEEN TAKEN IN THE PREPARATION OF THE DATA CONTAINED HEREIN, IT IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION. THIS MATERIAL SAFETY DATA SHEET PROVIDES GUIDELINES FOR THE SAFE HANDLING AND USE OF THIS PRODUCT; IT DOES NOT AND CANNOT ADVISE ON ALL POSSIBLE SITUATIONS, THEREFORE, YOUR SPECIFIC USE OF THIS PRODUCT SHOULD BE EVALUATED TO DETERMINE IF ADDITIONAL PRECAUTIONS ARE REQUIRED.

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