



# TEMPEST

## POWER SECURITY BATTERY

### 1-800-727-8658

MATERIAL SAFETY DATA SHEET (MSDS) **UPDATED October 23, 2020**

#### SECTION 1: PRODUCT INFORMATION

|   |                                |
|---|--------------------------------|
| Chemical/Trade name (as used on label)          | Chemical Family/Classification |
| Sealed Lead Acid Battery                        | Electric Storage Battery       |
| <b>Manufacturer's Name</b>                      | Address                        |
| Tempest   | 1272 Alma Ct.                  |
| <b>TEMPEST</b> Safety Department 1-800-727-8658 | San Jose, CA 95112             |

#### SECTION 2: HAZARD(S) IDENTIFICATION

| Exposure Limits Material                  | % By Wt. | CAS Number | Air Exposure Limits (ug/m3) |       |       |
|---|----------|------------|-----------------------------|-------|-------|
|   |          |            | OSH                         | AGGIH | NIOSH |
| Lead                                      | 57       | 7439-92-1  | 50                          | 150   | 100   |
| Lead Oxide                                | 22       | 1309-60-0  | 50                          | 150   | 100   |
| Electrolyte (32% Sulfuric Acid 68% Water) | 14       | 7664-93-9  | 1                           | 1     | 1     |

(Note: Product contains 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).

#### Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Material is Solid at normal temperatures.

##### Electrolyte

|                              |                    |                         |                |
|------------------------------|--------------------|-------------------------|----------------|
| <b>Boiling Point</b>         | 230oF / 110oC      | <b>Melting Point</b>    | Lead 327.4oC   |
| <b>Specific Gravity</b>      | 1.215-1.350        | <b>Vaport Density</b>   | Not determined |
| <b>% Volatiles By Weight</b> | Not Applicable     | <b>Vapor Pressure</b>   | Not determined |
| <b>Solubility in Water</b>   | 100% (electrolyte) | <b>Evaporation Rate</b> | Not determined |

##### Appearance and Odor:

**Electrolyte is a clear liquid with a acidic odor**

## SECTION 4: FIRST-AID MEASURES

Under normal operation conditions, the internal material will not be hazardous to your health. Only internally exposed material during production or case brakage or extreme heat (fire) may be hazardous to your health.

### Routes of Entry

|                |   |
|----------------|---|
| Installation   | Acid mist from formation process may cause respiratory irritation.    |
| Skin Contact   | Acid may cause irritation, burns and/or ulceration.                   |
| kin Absorption | Not a significant route of entry.                                     |
| Eye Contact    | Acid may cause sever irritation, curns, comea damage and/or blindness |
| Ingestion      | Acid may cause irritaion of mouth, throat, esophagus and stomach.     |

### Sign and Symptoms of Over Exposure:

|                           |  |
|---------------------------|--|
| Acute Effects             | Over exposure to lead may lead to loss of appetite, constipation, sleeplessness and fatigue. Over exposure to acid may lead to skin irritation, corneal damage of the eyes and upper respiratory system.   |
| Chronic Effects           | Lead and its components may cause damage to kidneys and nervous system. Acid and its components may cause lung damage and pulmonary conditons.   |
| Potential to Cause Cancer | The International Agency for Research on Cancer has classified "strong inorganic acid mist containing sulfuric acid" as a <b>Category 1 carcinogen</b> a substance that is carcinogenic to humans. This classificatin does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Inorganic acid mist is not generated under normal use of this. Product. Misuse of the product, such as overcharging, may however result in the genration of sulfuric acid mist. |

### Emergency and First Aid Procedures

|            |  |
|------------|--|
| Inhalation | Remove from exposure and apply oxygen if breathing is difficult.                     |
| Skin       | Wash with plenty of soap and water. Remove any contaminated clothing.                |
| Eyes       | Flush with plenty of water immediately for at least 15 minutes. Consult a physician. |
| Ingestion  | Consult a physician immediately.   |

### California Proposition 65

The State of California has determined that certain battery terminals and related accessories contain I lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.

**Warning: Wash hands throroughly after handling batteries**

**SECTION 5: FIRE-FIRGHTING MEASURES**

|   |   |
|---|---|
| <b>Flash Point</b>                        | Hydrogen=259oC  |
| <b>Auto Ignition Temperature</b>          | Hydrogen=580oC  |
| <b>Extinguishing Media</b>                | Dry Chemical, foam, CO2   |
| <b>Unusual Fire and Explosion Hazards</b> | 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. |

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

Procedures for Cleanup. Avoid contact with any spilled material. Conatain 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 accorrdance with applicalelocal, state and federalregulations. 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 saftey glasses with side shields/face shield recommended.

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**

**Precautions for safe handling:**

|                                |   |
|--------------------------------|---|
| <b>Advice on Safe Handling</b> | Handle in accordance with good industrial hygiene and safety practice. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-verntilated area. Do not breathe dust/fume/gas/mist/vapors/spray. Due to the battery's low internal resistance and high power density, high levels of short circuit current can be developed across the battery terminals. Do not rest tools or cables on the battery. Use insulated tools only. Follow all installation instructions and diagrams when installing or maintaining battery systems. |
|--------------------------------|---|

**Conditions for safe storage, including any incompatibilities:**

|                               |   |
|-------------------------------|---|
| <b>Storage Conditions</b>     | Store batteries in a cool, dry, well ventilated area that are separated from incompatible materials and any activities which may generate flames, sparks, or heat. Keep clear of all metallic articles that could contact the negative and positive terminals on a battery and create a short circuit condition.  |
| <b>Incompatible Materials</b> | Sulfuric acid: 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.<br>Lead Compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permangante, peroxides, nascent hydrogen, and reducing agents. |

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION****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. Also if acid spillage occurs in a confined space, exposure may occur. 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 face shield worn over safety glasses.

**Hands, Arms, Body:**

Vinyl coated, VC gauntlet type gloves with rough finish are preferred.

**Other Special Clothing and Equipment:**

Safety shoes are recommended when handling batteries. All footwear must meet requirements.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

| Item                                    | Lead and lead compounds | Electrolyte       |
|---|-------------------------|-------------------|
| Appearance                              | Form:                   | Liquid            |
|   | Color:                  | Colorless         |
|   | Odor:                   |                   |
| PH                                      | N/A                     |                   |
| Melting point/freezing point.           | 327.4°C(melting point)  | 35 to -60 °C      |
| Initial boiling point and boiling range | 1740°C(lit)             | Approx. 108-114°C |
| Flash point                             | N/A                     |                   |
| Evaporation rate.                       | N/A                     |                   |
| Vapor pressure. (mm Hg at 20° C         | N/A                     |                   |
| Vapor density.(Air=1)                   | 7.1                     | 3.4               |
| Density(20° C)                          | 11.35 g/cm              | 1.2 to 1.3 g/cm   |
| solubility in water:                    | 3                       | Fully soluble     |
| Partition coefficient: n-octanol/water. | N/A                     |                   |
| Decomposition temparture.               | N/A                     |                   |

Lead and Lead compounds used in Lead Acid batteries are poorly soluble in water. Lead can be dissolved in acidic or alkaline environment only

**SECTION 10: REACTIVITY DATA**

|  |  |
|--|--|
| Stability  | Stable   |
| Conditions to Avoid  | Sparks and other sources of ignition   |
| <b>Incompatibility: (materials to avoid)</b>   |  |
| 1  | Lead/lead compounds: Potassium carbides, sulfides, peroxides phosphorus, sulfur.   |
| 2  | Battery electrolyte (acid): Combustible materials, strong reducing agents most metals, carbides, organic materials, chlorates, nitrates, picrates, and fulminates. |
| <b>Hazardous Decomposition Products:</b>   |  |
| 1  | Lead/lead compounds: Oxides of lead and sulfur   |
| 2  | Battery electrolyte (acid): Hydrogen, sulfur dioxide, and sulfur trioxide.   |
| <b>Conditions to Avoid:</b>  |  |
| High temperature. Battery electrolyte (acid) will react with water to produce heat. Can react with oxidizing or reducing agents. |  |

## SECTION 11: TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure:**

**Product Information**

|              |                          |
|--------------|--------------------------|
| Eye Contact  | Causes severe eye damage |
| Skin Contact | Causes severe skin burns |
| Inhalation   | Harmful by inhalation    |
| Ingestion    | Harmful if swallowed     |

**Component information:**

| Chemical Name              | Oral LD50        | Dermal LD50 | Inhalation LC50   |
|----------------------------|------------------|-------------|-------------------|
| Sulfuric Acid<br>7664-93-9 | *2140mg/kg (Rat) | *           | 510 mgm* (Rat) 2h |
| Tin<br>7440-31-5           | *700 mg/kg (Rat) | *           | *                 |

**Information on physical, chemical and toxicological effects:**

|                 |  |
|-----------------|--|
| <b>Symptoms</b> | Please see section 4 of this SDS for symptoms. |
|-----------------|--|

**Delayed and immediate effects as well as chronic effects from short and long-term exposure:**

|                        |   |
|------------------------|---|
| <b>Carcinogenicity</b> | The table below indicates whether each agency has listed any ingredient as a carcinogen. However, the product as a whole has not been tested. IARC has classified "strong inorganic acid mist containing sulfuric acid" as a category 1 carcinogen, 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 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. Hazardous exposure to lead can occur only when product is heated, oxidized, or otherwise processed or damaged to create dust, vapor or fume. |
|------------------------|---|

| Chemical Name              | ACGIH | IARC     | NTP            | OSHA |
|----------------------------|-------|----------|----------------|------|
| Lead<br>7439-92-1          | A3    | Group 2A | Reasonably Ant | X    |
| Sulfuric Acid<br>7664-93-9 | A2    | Group 1  | Known          | X    |

|  |
|--|
| <b>Legend</b>  |
| <b>ACGIH (American Conference of Governmental Industrial Hygienists)</b> |
| A2- Suspected Human Carcinogen   |
| A3- Animal Carcinogen  |
| <b>IARC (International Agency For Research On Cancer)</b>                |
| Group 1- Carcinogenic to Humans  |
| Group 2A- Probably Carcinogenic to Humans                                |

NTP (NATIONAL Toxicology Program)

Known- Known Carcinogen

Reasonably Anticipated- reasonably Anticipated to be a human Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X-Present. Reproductive toxicity: May damage fertility or the unborn child. STOT- repeated exposure

Causes damage to organs through prolonged or repeated exposure. Numerical measures of toxicity: Not determined.

## SECTION 12: ECOLOGICAL INFORMATION

### Ecotoxicity:

Very toxic to aquatic life with long lasting effects.

| Chemical Name   | Algae/aquatic plants | Crustacea                       | Toxicity to microorganisms |
|---|----------------------|---------------------------------|----------------------------|
| Lead<br>7439-92-1   |                      | 600: 48h water flea<br>pgL EC50 |                            |
| Sulfuric Acid 7664-93-9   |                      | 29: 24 h Daphnia magna mgLEC50  |                            |
| Fish  |                      |                                 |                            |
| 0.44: 96 h Cyprinus carpio mg/L LC50 semi-static 1.17: 96h Oncorhynchus mykiss mg/L LC50 flow-through 1.32: 96h<br>Oncorhynchus mykiss mg/L LC50 static |                      |                                 |                            |
| 500: 96h Brachydanio rerio mg/L LC50 static   |                      |                                 |                            |

### Persistence/Degradability

Not determined

### Bioaccumulation

Not determined

### Mobility

Not determined

## SECTION 13: DISPOSAL CONSIDERATIONS

### Waste Treatment Methods

|                               |   |
|-------------------------------|---|
| <b>Disposal of Wastes</b>     | Spent Batteries - send to secondary lead smelter for recycling. Follow applicable federal, state and local regulations. Neutralize as in preceding step. Collect neutralized material in sealed container and handle as hazardous waste as applicable. A copy of this SDS must be supplied to any scrap dealer or secondary lead smelter with the |
| <b>Contaminated Packaging</b> | Battery. Disposal should be in accordance with applicable regional, national and local laws and regulations.  |

| Chemical Name  | RCRA | RCRA U Series | RCRA D Series             | RCRA- Basis for Listing   |
|----------------|------|---------------|---------------------------|---|
| Lead 7439-92-1 |      |               | 5.0 mg/L regulatory level | Included in waste streams: F035, F037, F038, F039, K002, K003, K005, K046, K048, K051, K052, K061, K062, K069, K086, K100, K176, K049 |

| Chemical Name            | California Hazardous Waste Status |
|--------------------------|-----------------------------------|
| Lead: 7439-92-1          | Toxic                             |
| Sulfuric Acid: 7664-93-9 | Corrosive                         |

**SECTION 14: TRANSPORTATION INFORMATION**

**SHIPPING REGULATIONS**

|   |   |
|---|---|
| Proper Shipping Name  | Batteries, Non-Spillable, Electric Storage              |
| U.S. DOT (US Department of Transportation)<br>IATA (International Air Transportation Civil Aviation Administration) | Unregulated, meets the requirement of 49 CFR 173.159(d) |
| IMO (International Maritime Dangerous Goods)  | Unregulated   |

**Comments:**

**TEMPEST** sealed lead-acid batteries are classified as "non-spillable" for the purpose of transportation by DOT, and IATA/ICAO Test described in DOT(49 CFR 173.159(d)as result of passing the Vibration and Provision A67).  
**Pressure Differential Test described in DOT(49 CFR 173.159(d) and IATA/ICAO (Special TEMPEST** seal lead-acid batteries can be safely transported on deck, or under deck stored on either cargo vessel as result of passing the Vibration and Pressure Differential Tests as described in the regulations.

**SECTION 15: REGULATORY INFORMATION**

**International Inventories**

| Chemical Name | TSCA    | DSL | NDSL | EINECS  | ELINCS  | IECSC | KECL    | PICCS/AICS |
|---------------|---------|-----|------|---------|---------|-------|---------|------------|
| Lead          | Present | X   |      | Present | Present | X     | Present | X          |
| Sulfuric Acid | Present | X   |      | Present | Present | X     | Present | X          |
| Tin           | Present | X   |      | Present |         | X     | Present | X          |
| Calcium       | Present | X   |      | Present |         | X     | Present | X          |

**Legend**

|                      |   |
|----------------------|---|
| <b>TSCA</b>          | United States Toxic Substances Control Act Section 8(b) Inventory                                 |
| <b>DSL/NDSL</b>      | Canadian Domestic SubstancesList/Non-Domestic Substance List                                      |
| <b>EINECS/ELINCS</b> | European Inventory of Existing Chemical Substances/ European List of Notified Chemical Substances |
| <b>ENCS</b>          | Japan Existing and New Chemical Substances  |
| <b>IECSC</b>         | China Inventory of Existing Chemical Substances   |
| <b>KECL</b>          | Korean Existing and Evaluated   |
| <b>PICCS</b>         | Phillipines Inventory of Chemicals and Chemicals Substances                                       |
| <b>AUCS</b>          | Australian Inventory of Chemical Substances   |

**US Federal Regulations**

**CERCLA**

| Chemical Name           | Hazardous Substances RQs | CERCLA/SARA RQ | Reportable Quantity            |
|-------------------------|--------------------------|----------------|--------------------------------|
| Lead 7439-92-1          | 10 lb                    |                | RQ 10 lb final RQ, RQ 4.54 kg  |
| Sulfuric Acid 7664-93-9 | 1000 lb                  | 1000 lb        | RQ 1000 LB final RQ, RQ 454 kg |
| <b>SARA 313</b>         |                          |                | Final RQ 4.54, RQ 454 kg       |

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name           | CAS No    | Weight % | SARA 313- Threshold Values % |
|-------------------------|-----------|----------|------------------------------|
| Lead- 7439-92-1         | 7439-92-1 | 65-75    | 0.1                          |
| Sulfuric Acid-7664-93-9 | 7664-93-9 | 14-20    | 1                            |

### CWA (Clean Water Act)

| Chemical Name | CWA- Reportable Quantities | CWA- Toxic Pollutants | CWA- Priority Pollutants | CWA Hazardous Substances |
|---------------|----------------------------|-----------------------|--------------------------|--------------------------|
| Lead          |                            | X                     | X                        |                          |
| Sulfuric Acid | 1000 lb                    |                       |                          | X                        |

### US State Regulations

#### California Proposition 65

This product contains the following Proposition 65 chemicals

| Chemical Name             | California Proposition 65                                     |
|---------------------------|---|
| Lead-7439-92-1            | Carcinogen Developmental Femal Reproductive Male Reproductive |
| Sulfuric Acid - 7664-93-9 | Carcinogen  |

#### U.S. State Right-to-Know Regulations

| Chemical Name           | New Jersey | Massachusetts | Pennsylvania |
|-------------------------|------------|---------------|--------------|
| Lead 7439-92-1          | X          | X             | X            |
| Sulfuric Acid 7664-93-9 | X          | X             | X            |
| Tin 7440-31-5           | X          | X             | X            |
| Calcium 7440-70-2       | X          | X             | X            |

### DISCLAIMER

The information provided in this Safety Data Sheet is correct to the best of our knowledge. Information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information materials or in any process, unless specified in the text.