

SDS (Safety Data Sheet)

1. Chemical Product and Company Identification

- **Product Name** : TX Li-ion battery
- **Product Code** : MPL-TLIB
- **Company Name:** Takachiho Sangyo Co., Ltd.
- **Address** : 10-1,Ehigashi. Higashi-machi, Iwakura, Aichi, Japan
- **Department in Charge:** Iwakura Factory
- **Telephone** : 0587-37-7771
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2. Summary of Hazards

The chemicals in the battery are enclosed in a sealed metal case designed to withstand temperatures and pressures encountered during normal handling. Therefore, under normal use, there is no physical hazard such as fire or rupture, nor chemical hazard from leakage of battery contents.

However, if the battery is exposed to fire, subjected to strong impact, disassembled, or electrically stressed due to misuse, the gas release valve may activate, or in extreme cases the battery case may rupture, causing leakage of internal materials.

Additionally, when strongly heated by surrounding fires, irritating or harmful gases may be generated.

- **GHS Classification:** Not applicable (This product is considered an “article” and is outside the scope of the GHS system.)
- **Most Important Hazards and Effects**
 - **Effects on human health:** Vapors from the electrolyte have anesthetic effects and can irritate the eyes, respiratory tract, and skin. Contact with the electrolyte may cause irritation and burns to the eyes and skin. It contains substances that can cause severe inflammation, particularly in the eyes.
 - **Environmental effects:** The materials persist in the environment; therefore, they must not be released into the environment.
- **Specific Hazards:**
 - The electrolyte generates harmful hydrogen fluoride when in contact with water.
 - Leaked electrolyte is flammable; keep it away from ignition.

3. Composition / Information on Ingredients

- **Substance or mixture:** Mixture
- **Chemical characteristics of the substances:**

CAS-No.	Substance name	Concentration (wt%)
21324-40-3	Lithium hexafluorophosphate	<3
96-49-1 108-32-7 105-58-8	Includes at least one of the following. 1,3 - Dioxolane - 2 - one 2 - Oxo -4 - methyl - 1,3 - dioxolane Diethyl carbonate	2 - 11
24937-79-9	1,1-Poly (difluoroethylene)	<1
7440-50-8	Copper	1 - 9
12190-79-3	Lithium cobalt oxide (LiCoO ₂)	10 - 27
7782-42-5	Graphite	5 - 17
7429-90-5	Aluminum	5 - 16
25971-63-5	Polycarbonate	9 - 13
2082-79-3	Octadecyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate	<1
1333-86-4	Carbon black	<1
9003-56-9	Acrylonitrile-butadiene-styrene copolymer (ABS)	14 - 19

4. First-aid measures

In case of exposure to electrolyte leaked from the battery

If inhaled:

- Blow your nose immediately, rinse your mouth, and seek medical attention if necessary.

If on skin:

- Wash thoroughly with plenty of water and soap immediately.

If in eyes:

- Rinse immediately with clean running water for at least 15 minutes without rubbing, and obtain medical attention.

In case of exposure to the battery or leaked electrolyte

If swallowed:

- Induce vomiting.
- If vomiting does not occur, or if the person feels unwell after vomiting, seek medical attention immediately.

5. Fire-fighting measures

Suitable extinguishing media:

- Water, carbon dioxide (CO₂), nitrogen gas, dry chemical extinguishers, foam extinguishers.

Specific hazards:

- Corrosive gases may be generated during fire-fighting operations.

Specific extinguishing methods:

- If other combustible materials are burning simultaneously, use the extinguishing method appropriate for those materials.
- Perform fire-fighting from the **upwind** side whenever possible.

Protective equipment for fire-fighters:

- Use appropriate protective equipment as described in **Section 8: Exposure controls and personal protection**.
- In case of fire, move the battery to a safe location immediately if it can be done safely.

Additional information:

- Residues from fire or chemically contaminated water must be disposed of in accordance with local regulations.

6. Accidental release measures**Handling precautions for leaked electrolyte or other battery contents:****Precautions for human health:**

- Restrict access to authorized personnel only, and remove the leaked material while wearing appropriate protective equipment as specified in Section 8: Exposure controls and personal protection. Avoid inhalation as much as possible. Avoid contact with skin as much as possible.

Environmental precautions:

- Do not release into the environment.

Removal method:

- Collect solid materials and place them into a suitable container. If the material has scattered, wipe it up with a dry cloth.

Prevention of secondary hazards:

- Avoid re-dispersion of the material.
- Keep away from sources of ignition.

7. Handling and storage**Precautions for safe handling**

- Do not short-circuit the positive and negative terminals with wires, chains, or other conductive materials.
- Do not connect the battery to equipment with reversed polarity.
- Do not allow the battery to become wet with water, seawater, beverages, acids, or expose it to strong oxidizers.
- Do not remove or damage the outer insulation tube.
- Do not throw the battery into fire or heat it.
- Do not disassemble, modify, or solder directly onto the battery.
- Do not subject the battery to impact or deformation.
- Do not charge the battery with non-specified chargers or non-approved charging methods.

- If charging does not complete within the specified time, terminate charging immediately.

Conditions for safe storage

- Store away from metal objects, water, seawater, strong acids, and strong oxidizers.
- Store at **30–50% state of charge (SOC)** in a **dry environment** at **–20 to 35°C** and **45–85% relative humidity**. Avoid direct sunlight, high temperature, and high humidity.
- Use packaging materials with sufficient insulation and mechanical strength to prevent accidental damage and to ensure that short circuits between the positive and negative terminals cannot occur during normal handling. Avoid conductive or easily damaged packaging materials.
- When storing large quantities of batteries, local fire regulations may apply.

8. Exposure controls and personal protection

Occupational exposure limits:

- No exposure limits have been established by the Japan Society for Occupational Health (JSOH) or ACGIH.

Appropriate personal protective equipment (PPE):

Respiratory protection:

- Self-contained breathing apparatus (SCBA) or dust mask, as appropriate.

Hand protection:

- Protective gloves.

Eye protection:

- Safety goggles or protective glasses that provide protection against liquid splashes.

Skin and body protection:

- Protective clothing.

9. Physical and chemical properties

Appearance

- **Physical state:** Solid
- **Form** : Rectangular prism
- **Color** : Black and metallic (silver)
- **Odor** : None

10. Stability and reactivity

Stability:

- Stable under normal handling and storage conditions.

Conditions to avoid:

- External short-circuiting of the battery, crushing or deformation, and exposure to temperatures above **100°C**, which may cause heat generation or ignition.
- Direct sunlight and high humidity.

Incompatible materials:

- Water, chains, metal fragments, and other conductive materials that may cause short circuits.

Hazardous decomposition products:

- Irritating or harmful gases may be released during fire.

11. Toxicological information

(Organic electrolyte)

Acute toxicity:

- LD₅₀ (oral, rat): $\geq 2,000$ mg/kg

Skin/eye irritation:

- Causes irritation to skin and eyes.

12. Ecological information**Persistence and degradability:**

- The components of the battery may persist in the environment. Used batteries must not be disposed of by landfilling or released into the environment.

13. Disposal considerations**Waste from product (residual waste):**

- In many countries, lithium-ion batteries are subject to battery regulations or similar laws that specify collection and disposal methods. (In Japan, this corresponds to the Act on the Promotion of Effective Utilization of Resources.)
- In countries where collection is mandated, battery manufacturers or importers are generally responsible for collection and recycling.

Contaminated containers and packaging:

- Under normal use, containers and packaging are not contaminated.
- If contaminated with leaked battery contents, they must be treated as **specially controlled industrial waste**.

14. Transport information**Specific safety measures and conditions for transport:**

- Avoid exposure to high temperatures and condensation during transport.
- Avoid transport conditions that may cause load collapse or damage to packaging.
- Protect the product from rainwater.
- Handle containers carefully to prevent damage.
- Avoid impacts to the battery.
- Refer also to **Section 7: Handling and storage**.

Lithium-ion battery cells and packs have been tested in accordance with

- UN Manual of Tests and Criteria, Part III, Sub-section 38.3.

Regulations by region or mode of transport

Worldwide – Air transport: IATA-DGR Worldwide – **Marine transport:** IMDG Code

The following requirements must be met:

UN3480 – Lithium-ion batteries

- **Packing instruction:** PI965 Section IA

UN3481 – Lithium-ion batteries contained in equipment / packed with equipment.

- **Packing instruction:** PI966 / PI967 Section I

Transport class:

- **Class 9** (Miscellaneous dangerous substances and articles)

Marine transport:

- Not eligible for Special Provision **SP188**. Therefore, the shipment must be declared as dangerous goods, labeled accordingly, and packaged in UN-approved packaging.

15. Regulatory information

Fire Service Act (Japan):

- The electrolyte is classified as **Hazardous Material Class 4 (Flammable Liquids), Category 2 Petroleum**.

Act on the Promotion of Effective Utilization of Resources (Japan):

- Classified as a **Designated Recyclable Product**.

16. Other information

- This Safety Data Sheet (SDS) is provided to ensure the safe handling of this product by businesses and operators.
- Employers and handlers should make effective use of this SDS (e.g., posting it at handling sites, training workers) and take appropriate measures under their own responsibility.
- The information contained in this SDS is based on the latest knowledge and current laws and regulations at the time of preparation.
- Numerical values such as content percentages and physicochemical properties are **not guaranteed values**.

Reference: Dangerous Goods Regulations – 64th Edition, Effective 1 January 2023, International Air Transport Association (IATA)