

SAFETY MATTERS



Safety Matters is intended to promote discussions of safety issues among underground construction professionals. You should always read and understand the operator's manual before operating any equipment. For additional information, please e-mail safety@ditchwitch.com.

TOPIC:

Lithium Ion Batteries—LITHIUM THIONYL CHLORIDE CELL AND BATTERY SAFETY

POTENTIAL HAZARDS

- Inhalation
- Skin Contact
- Burn
- Explosive
- Irritation to skin, eyes, lungs, and mucous membranes

PRECAUTIONS

- Do not short circuit.
 - Take care not to store or carry with anything metal that could contact the terminals.
- Do not expose to temperatures above the maximum rated temperature as specified by the manufacturer.
- Do not recharge, over charge, cut, puncture, or crush any cell or pack.
- Do not solder wires or tabs directly to the battery. Only solder to the leads welded to the cell by the manufacturer.
- Do not connect cells or batteries of different chemistries together.
- Do not connect cells or batteries of different sizes together.
- Do not connect old and new batteries together.
- Do not store cells near other combustible or flammable materials.
- Wear chemical goggles, gloves and other PPE when handling a leaking battery.

WHAT TO DO

- Eye Contact – Flush with running water for at least 15 minutes while holding eyelids apart. Eye contact may result in acidic burns to the eye. Seek medical attention.
- Skin Contact – Rinse with large amounts of water for several minutes. Avoid rubbing skin. If burns develop, seek medical attention immediately.
- Inhalation – Move to fresh air. If difficulty breathing, administer oxygen. Seek medical attention.
- Ingestion – Drink copious amounts of water or milk. Do not induce vomiting. Never give anything by mouth to an

unconscious person. Seek medical attention.

INFORMATION/FACTS

- Battery may be explosive at higher temperatures.
- With proper use and handling, lithium batteries have demonstrated an excellent safety record. The success and wide use of lithium batteries is partially because they contain more energy per unit weight than conventional batteries. However, the same properties that result in a high-energy density also contribute to potential hazards if the energy is released at a fast-uncontrolled rate.
- Internal contents are extremely hazardous.
- Leaking fluid is corrosive and dangerous upon inhalation.
 - If battery leaks or vents, health hazards may occur.
 - Acute – Vapors are very irritating to skin, eyes, and mucous membrane. Inhalation of sulfuric acid or thionyl chloride vapors can result in pulmonary edema.
 - Chronic – Overexposure can cause symptoms of non-fibrotic lung injury.
- Touching the positive and negative poles with a conductive metal will quickly result in heat buildup and potential vent or explosion.
- Abuse or mishandling of lithium batteries can still result in hazardous conditions. The information provided here is intended to give users some guidelines to safe handling and use of lithium batteries.

TALES FROM THE TRENCH

- Two workers were attempting to use an alternate battery pack power source to power their remote. As the male and female ends touched, there was a loud noise and the worker screamed in pain. The battery pack exploded giving the worker second degree burns on his hand.
- A worker went to replace a battery cell in a digital locator. The worker did not inspect the battery and missed some visible damage on the cell. A puncture was present on the cell. After installation of the cell, the worker's eye became irritated due to the vapors venting from the punctured cell.

*REFER TO THE SDS FOR MORE INFORMATION ON LITHIUM ION BATTERIES.

**DON'T LEARN SAFETY
BY ACCIDENT**

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