



Guidelines for Handling Lithium Batteries

catalog number 1757-PLXBAT

Lithium batteries are primary (not rechargeable) cells that give extended memory support to the Logix5550 controller.

Safety Considerations



ATTENTION: Failure to follow the guidelines in this document may result in damaged equipment and/or personal injury.

Use the battery for its intended application only. **Do not:**

- recharge
- open, puncture, or crush
- incinerate or expose to high temperatures
- solder leads
- short positive or negative terminals together
- ship or dispose except according to the procedures in this document

Storing Batteries

- Store in a cool, dry environment. We recommend 25° C with 40-60% relative humidity.
- Do not store in temperatures above 100° C (212° F). The rate of capacity loss increases as storage temperature increases. For example, a battery stored at 40° C for 5 years can lose up to 25% of its original capacity.
- Regularly monitor the temperature and humidity of the storage area.
- Use a first-in/first-out system for handling stored batteries.
- Store in the original containers away from flammable materials.
- Keep track of storage time. Reference storage time to the date of manufacture.
- Do not store batteries longer than 10 years.
- Do not store used batteries longer than 3 months before disposal.
- Clearly mark the contents of the storage area.
- Place a Lith-X or Class D Powder fire extinguisher in a readily accessible area in or around the storage area.
- Ventilate and protect the storage area against fire. You must have a system that automatically detects and extinguishes fires and automatically activates an alarm signal.
- Do not smoke in the storage area.

Transporting Lithium Batteries

The Department of Transportation (DOT) regulates the transportation of materials within the United States under the Code of Federal Regulations, CFR49, "Transportation." An exemption to these regulations, DOT-E7052, allows the transportation of flammable solids (such as lithium batteries) under certain conditions. You may transport lithium batteries by:

- motor vehicle
- rail freight
- cargo vessel
- cargo-only aircraft

You cannot transport lithium batteries by passenger aircraft.

Exporting to Foreign Countries

Shipment of materials outside the United States is subject to specific regulations of the countries involved or to regulations endorsed by those countries, such as the Restricted Articles Regulations of the International Air Transportation Association (IATA), Geneva, Switzerland.

The Code of Federal Regulations requires you to keep a copy of the exemption DOT-E7052 at each facility where you use packaging in connection with the shipment of lithium batteries.

See the disposal section for other regulations which apply to the shipment of depleted batteries.

Regulations for transporting lithium batteries are periodically revised.

Reshipment of lithium batteries

A special provision of the exemption DOT-E7052 paragraph 8-a lets you reship lithium batteries:

"Persons who receive cells and batteries covered by this exemption may re-ship them... in any of the packages authorized in this exemption including those in which they were received."

Battery Disposal



ATTENTION: Do not incinerate or dispose of lithium batteries in general trash collection. They may explode or rupture violently. Check state and local regulations dealing with the disposal of these materials. You are legally responsible for hazards created while your battery is being disposed.

Collect batteries for disposal carefully to prevent short circuiting, compacting, or destroying the battery case.

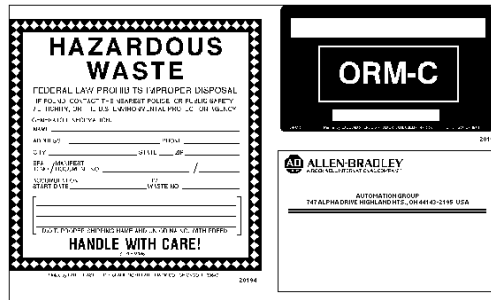
Disposing of Depleted Batteries

1. Visually inspect all batteries for damage to the battery casing or leakage of electrolyte. If a battery is damaged and/or leaking, see the following section on handling damaged batteries..
2. If the battery has leads and is clean and undamaged, use side cutters to remove the leads as close to the body of the battery as possible.



ATTENTION: Do not damage the battery case when removing leads.

3. Put clean and undamaged batteries in a polyethylene bag and heat seal the bag.
4. Store the bagged batteries in a closed metal container filled with Vermiculite. Accumulate enough batteries to fill a 55 gallon metal drum, which can hold 2000-3000 batteries.
5. Get a 55 gallon drum and weigh the empty drum.
6. Line the bottom of the drum with about 6 inches of Vermiculite and put a layer of bagged batteries on top of this filler layer. Stay 6 inches away from the sides of the drum.
7. Add Vermiculite to fill the space between the bagged batteries and the sides of the drum. Then add a 6-inch layer of Vermiculite on top of the layer of batteries. Repeat step 6 and 7 until the drum is full.
8. When the drum is full add a top 6-inch layer of Vermiculite and seal the drum.
9. Weigh the full drum and estimate the weight of Vermiculite used in the packing process.
10. Place the following labels on the upper-third of the drum:
 - one Hazardous Waste label
 - one ORM-C label
 - one shipping label



11. Contact your local Environmental Protection Agency (EPA) office for information about battery disposal companies.

Disposal of Damaged and/or Leaking Batteries



ATTENTION: If the batteries are badly damaged and/or leaking, evacuate all personnel from the immediate area.

You must wear protective clothing (protective eyewear, clothes, safety shield, and self-contained breathing apparatus).

Do not:

- pick up ruptured batteries with bare hands. Lithium can cause skin burns. Use tongs, scoops, or a shovel to place the batteries in a mineral-oil-filled container.
- breathe fumes. Ventilate the area to disperse the fumes before entering the room.

If toxic or corrosive material comes in contact with your eyes or skin, flush with water and consult a physician. Dispose of clothing that is contaminated.

Use the following procedure to dispose of damaged and/or leaking batteries:

1. Put the damaged batteries in two polyethylene bags and add about 1 ounce of calcium carbonate (CaCO_3) to the inner bag. Slowly-leaking batteries have a deposit of white salt crystals on the outside of the battery casing.
2. Heat seal both bags.
3. Take the container outside. This helps air out the area where you discovered the damaged batteries.
4. Contact your local EPA office for information about battery disposal companies.

Overheated Batteries

An overheated battery may explode or rupture violently. If you must try to save the battery, wear the protective clothing described above. If a lithium battery overheats:

- take shelter
- attempt to remove any external source of heat
- remove power from any equipment involved
- remove the battery to a well-ventilated fire-protected area after it cools

In Case of a Lithium Fire



ATTENTION: Do not use water or carbon dioxide (CO_2) fire extinguishers in a lithium battery fire. Lithium reacts with these substances.

If lithium is burning:

- avoid exposure to toxic fumes from burning lithium
- smother the fire using a Class D fire extinguisher or a graphite powder, such as Lith-X
- you can also use a long-handled tool to apply an appropriate metal fire extinguishing powder

Shipping Batteries

Important: Do not ship a damaged or overheated battery.

Ship batteries for disposal to a proper site according to transportation regulations. The U.S. Department of Transportation authorizes shipment of lithium batteries for disposal by motor vehicle only in regulation 173.1015 of CFR49 (latest revision).

The EPA does not regulate lithium batteries, even though the material in the batteries is toxic, reactive, and corrosive.

Hazards to Personnel

Potential hazards to personnel include:

- burns from overheated cells
Wash skin with running water and go to the nearest medical center.
- injury from explosion or violent rupture of overheated cells
- injury from fire caused by combustion of lithium
- exposure to toxic or corrosive liquids or gases from the battery or its decomposition products
Remove and discard contaminated clothing.
Wash areas where clothing touched skin.
If breathing difficulties result, remove the person from the area, administer oxygen, then go to the nearest medical center.
Rinse eyes immediately for at least 15 minutes without interruption.
Go to the nearest medical center then advise the attending physician of contact with thionyl chloride (SOCl_2).

Installing/Replacing Lithium Batteries

Use the following procedure for installing and replacing lithium batteries:



ATTENTION: Maintain power to your memory equipment throughout the entire replacement procedure. Failure to do this results in lost and/or altered memory.

1. Maintain backplane power to the equipment. Open the controller door. If the compartment does not contain a battery, go to step 4.
2. Before removing the old battery, check for signs of damage



ATTENTION: If the battery case is broken:

- ventilate the area
- wear protective clothing and safety equipment
- use a scoop or tongs for handling the battery
- place the battery in a well-ventilated, fire-protected area
- see the previous section on disposing of damaged and/or leaking batteries

3. Remove the old battery. See the previous section on battery disposal.

Important: When replacing a lithium battery with another lithium battery, make sure the replacement is identical to the original battery.

4. Read the caution label. Locate the two date labels supplied with the new battery. Write the current date on both labels. Place one date label on the inside door of the controller. If the battery has a space for a date, write directly on the battery; otherwise place the second date label on the battery.
5. Install the battery.
6. Close the controller door.
7. Turn the backplane power on. Wait until the OK light turns green and then check that the battery low indicator is off. If the indicator is on and the battery is connected properly, replace the battery.



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