

LiFe batteries (LiFePO<sub>4</sub> - Lithium Iron Phosphate) have several advantages over LiPo (Lithium Polymer) batteries. Most importantly, LiFe batteries are much safer. LiFe batteries also have a much longer cycle and calendar life, and consist of iron and phosphate which have a much lower environmental impact than the cobalt used in LiPo batteries. It is **important** to have a good understanding of the operating characteristics of LiFe batteries - most importantly, how to charge and take care of them safely. Always read the specifications printed on the battery's label and in this instruction sheet in their entirety prior to use. Failure to follow these instructions can quickly result in severe, permanent damage to the battery and its surroundings!

### WARNING!



LiFe batteries are **ENTIRELY DIFFERENT** from NiCd, NiMH, and LiPo batteries and must be handled differently. TrakPower will not be held responsible for any and all incidental damages and bodily harm that may result from improper use of TrakPower brand LiFe batteries. In purchasing these products, the buyer/user agrees to bear all responsibilities of these risks and not hold TrakPower and/or its distributors (owners and employees) responsible for any accidents, injury to persons, or property damage. If you do not agree to these conditions, please return the battery to the place of purchase.

Before and after every use of your LiFe battery, inspect the pack carefully to ensure no physical damage is evident, such as swelling, splitting or torn outer heat shrink wrapper, or loose plugs and wires. Such signs can often indicate a problem exists with the battery that could lead to failure.

### LiFe BATTERY RATINGS

LiFe packs are made of individual cells that are connected together in *SERIES*. Connecting cells in series adds the voltage of all cells to result in a total pack voltage. A 6.6V 1600mAh pack is made up of two 3.3V 1600mAh LiFe cells ( $2 \times 3.3V = 6.6V$ ). This is referred to as a "2S" pack, meaning two cells in series. Each LiFe cell has a *NOMINAL* voltage of 3.3V. A fully charged LiFe cell is 3.6V, and a fully depleted LiFe cell is 2.5V. Most LiFe chargers and balancing equipment are based using a battery's nominal voltage rating as a parameter.

Battery capacity is measured in mAh (milliamp-hours), being the amount of current that the battery can deliver over a certain time period. The larger the capacity, the longer the run or operating time.

### IMPORTANT WARNINGS!



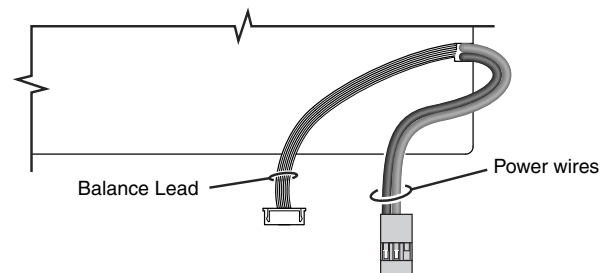
Be sure to **READ** and **FOLLOW** these important warning statements regarding the charging of LiFe batteries:

- **NEVER** charge LiFe batteries with a charger not specifically compatible with **LiFe** batteries! **ONLY** use a charger which can apply the "constant current/constant voltage" (cc/cv) charge technique with LiFe voltage settings.
- **ALWAYS** charge LiFe batteries in an area with adequate ventilation.

- **NEVER** charge LiFe batteries at currents greater than the "1C" rating of the battery.
- **NEVER** allow the temperature of LiFe batteries to exceed 140°F (60°C) at any time. Overheating will cause permanent damage. Do not reuse your LiFe battery if you suspect it has been damaged in any way.
- **ALWAYS** discontinue charging a LiFe battery immediately if at any time you witness smoke or see the battery starting to swell. This may cause the battery to rupture and/or leak, and the reaction with air may cause the chemicals to ignite, resulting in fire. Disconnect the battery and leave it in a safe, fireproof location (ideally outside).
- **NEVER** continue to charge LiFe batteries if the charger fails to recognize full charge. Overheating or swelling of the LiFe cells is an indication that a problem exists. The batteries should be disconnected from the charger immediately and placed in a fireproof location!

### CHARGING THE BATTERY

1. **IMPORTANT!** Choose an isolated, fireproof area to charge the battery. **NEVER** place the charger or battery on or near flammable or combustible objects during the charge process. **Keep away from carpets, wood, paper, plastic, cluttered workbenches, etc. Do NOT charge batteries in the model, nor inside an automobile. Placing batteries inside an army surplus ammunition can, ceramic flower pot, or on a large concrete surface is recommended.**
2. Use a LiFe compatible charger that includes built-in balancing capabilities such as the TrakPower VR-1 Dual Racing Charger (TKPP5000), Onyx 235 (DTP4235), Onyx 245 (DTP4245) or the LiFeSource AC/DC charger (HCAM6375).
3. Set the charger's output voltage to **EXACTLY** match the nominal rated voltage shown on the battery label. **NEVER** set the charger to a voltage which is greater than the nominal voltage rating of the LiFe pack or allow LiFe cells to charge to greater than 3.6V per cell at any time!! Overcharging usually will result in a permanent, catastrophic failure in the LiFe cells. This can result in permanent damage to the battery and its surroundings, and cause personal injury!
4. Set the charger's output current to **NO GREATER** than a "1C" rating of the battery. See the section on page 1 for details.



5. Connect the battery's main lead and balancing lead to the charger as described in the charger's instructions. **ALWAYS** connect a charge adapter lead to the charger **BEFORE** connecting the battery to the charger.
6. Start the charge process.

## OVERHEATED PACKS

When handling LiFe batteries, it is recommended to have a class "D" fire extinguisher available. At minimum, a medium size (2 gallon) metal bucket filled with sand will work. A scoop for the sand and fireproof gloves are also recommended. In the event that a LiFe battery begins to smoke, immediately bury the battery in your bucket of sand or use the fire extinguisher. If **SAFELY** possible, move the battery outdoors. If the battery cannot be taken outside, evacuate the building and open all doors to clear the fumes. If needed, call the fire department. Avoid breathing the fumes. **TIP:** Keep a large zip lock bag filled with sand in your pit box. This is handy for when you travel to events. If a battery fails, simply throw the bag onto the battery. As the plastic melts, it will cover the pack with sand.

## HANDLING, STORAGE & TRANSPORTATION



- **ALWAYS** store LiFe cells/packs in a fireproof container and place in a secure location away from children.
- **NEVER** leave a LiFe battery unattended at ANY TIME while being charged or discharged!
- **NEVER** put a LiFe pack in the pocket of any clothing!
- **ALWAYS** have a lithium-approved "Class D type" fire extinguisher or a bucket of sand available at all times.
- **NEVER** allow LiFe batteries to come in contact with water or moisture at any time. If batteries do come in contact with water or moisture, immediately dry them with a clean towel.
- **NEVER** store batteries near an open flame or heater.
- **NEVER** allow LiFe batteries to become punctured, especially by metallic objects such as screwdrivers, hobby knives, etc.
- **DO NOT** expose battery packs to direct sunlight for extended periods of time.
- **NEVER** leave LiFe batteries laying loosely anywhere in a full size automobile (in the trunk, backseat, floor, etc.). Never leave them inside the vehicle indefinitely, as temperatures can easily rise far in excess of 120°F and damage the battery. When transporting LiFe batteries, ALWAYS store them in a fireproof container.
- For long term storage (more than 6 months) it is recommended to charge the battery fully, then discharge it to 60% to 75% of its rated capacity.
- Store the battery at room temperature in a cool or shaded area, ideally between 40° to 80°F. Temperatures exceeding 170°F for greater than 1 hour may cause damage to the battery and cause a fire.
- **NEVER** allow LiFe batteries to freeze. This will damage the cells and reduce performance.
- **ALWAYS** make sure all plugs/connectors on the LiFe battery are covered, to prevent an accidental short.
- **ALWAYS** make sure that metallic objects, such as wristwatches, bracelets, or rings, are removed from your hands when handling LiFe packs. Accidentally touching battery terminals to any such objects could create a short circuit condition and possibly cause severe personal injury.

## FIRST AID INSTRUCTIONS

If the battery's outer case is punctured, cracked or torn, **DO NOT** allow the battery's internal chemicals to get in the eyes or the skin. Wash affected areas with soap and water immediately if they come in contact with the electrolyte. If electrolyte makes contact with the eyes, flush with large amounts of water for 15 minutes and seek medical attention immediately! If a battery leaks electrolyte or gas vapors, do not inhale leaked material. Leave the area and allow the batteries to cool and the vapors to dissipate. Remove spilled liquid with absorbent towels and dispose.

## DISPOSAL of LiFe BATTERIES

LiFe batteries are environmentally friendly. For safety reasons, it's best that LiFe cells be fully discharged before disposal (however, if a pack or cell is physically damaged, it is **NOT** recommended to discharge LiFe cells before disposal - see details below). Batteries must cool before proceeding with the disposal instructions.

### To dispose of LiFe cells and packs:

1. If there are any signs that any LiFe cell in the pack has been physically damaged, resulting in a swollen cell or a split or tear in a cell's covering, do NOT discharge the battery. Jump to step 5.
2. Place the LiFe battery in a fireproof container or bucket of sand.
3. Connect the battery to a discharger. Set the discharge cutoff voltage to the lowest possible value. Set the discharge current to a C/10 value, with "C" being the capacity rating of the pack. For example, the "1C" rating for a 1600mAh battery is 1.6A, and that battery's C/10 current value is (1.6A/10) 0.16A or 160mAh. Or, a simple resistive type of discharge load can be used, such as a power resistor or set of light bulbs, as long as the discharge current doesn't exceed C/10 value and cause an overheating condition. It's also possible to discharge the battery by connecting it to an ESC/motor system and allowing the motor to run indefinitely until no power remains to further cause the system to function.
4. Discharge the battery until its voltage reaches 1.0V per cell or lower. For resistive load type discharges, discharge the battery for up to 24 hours.
5. Submerge the battery into a bucket or tub of saltwater (5-10% salt solution). This container should have a lid, but it does not need to be airtight. Prepare a bucket or tub containing 3 to 5 gallons of cold water. Mix in 1/2 cup of salt per gallon of water. Drop the battery into the saltwater. Allow the battery to remain in the tub of saltwater for 7 to 10 days.
6. After 7 to 10 days in the saltwater the LiFe battery can be removed. Please recycle the battery at your local battery recycling center. Do not dispose of the battery in regular trash.

For Technical Service and Support on your TrakPower LiFe product, please contact:

### Hobby Services

3002 N. Apollo Drive, Suite 1  
Champaign, IL 61822

(217) 398-0007

Or e-mail us at [hobbyservices@hobbico.com](mailto:hobbyservices@hobbico.com)  
[trakpowerusa.com](http://trakpowerusa.com)