

CLP Pictograms



Signal word: **Danger**

**Safety Instructions:** The following safety instructions for the proper handling of LiPo batteries need to be strictly followed!

SLS-Lithium-Polymer batteries are specifically designed for use in RC model building. These safety instructions must be fully read and strictly adhered to before use. Improper handling can lead to explosions, fires, the release of toxic gases, as well as chemical burns or poisoning. Since we cannot monitor the proper handling after delivery, we do not assume any liability for damages or consequential damages of any kind.

### 1. General Safety Precautions

- **Storage and Protection:** Always store and charge SLS batteries in a fireproof container or on a fireproof surface that prevents the spread of a possible fire. The battery should be stored in a dry, dark, and cool place, never in direct sunlight or extreme heat. Keep the battery away from children and unauthorized persons.
- **Use:** Use the battery only for RC aircraft, vehicles, or ship models. Ensure that the battery's specifications regarding cell count, voltage, discharge/charge current, and nominal/end-of-charge voltage are strictly followed and not exceeded.

### 2. Charging the Battery

- **Suitable Charger:** Use only high-quality chargers suitable for lithium-polymer batteries. Ensure that the charging program, cell count, charging current, and cut-off voltage are correctly set. The charging process must always be monitored and never performed while the battery is installed in the RC model. The charger must have a powerful balancer/equalizer that can quickly and effectively equalize different voltages. SLS batteries do not have their own protection circuit to prevent overcharging or deep discharging, nor do they provide their own balancing/equalizing.
- **Fireproof Surface:** Always charge the battery on a fireproof surface or in a fireproof container. Never leave the battery unattended while charging.

### 3. Explanation of Battery Specifications

**Example: 3S1P 3700 mAh 30C/60C 4C:**

**3S1P:** The battery consists of three cells connected in series (3S). "1P" stands for a single parallel connection.

**3700 mAh:** The battery has a capacity of 3700 mAh, indicating the amount of energy it can store.

**11.1 V:** The nominal voltage is 11.1 V (3.7 V per cell). When fully charged, the voltage is 12.6 V (4.2 V per cell).

**30C/60C:** The cells can be continuously discharged at 30C (equivalent to 111 Amps) and briefly at 60C (equivalent to 222 Amps).

**4C:** The battery can be charged at a maximum of 4C (equivalent to 14.8 Amps). Lower charging currents preserve the battery. Standard is 1C (3.7 Amps).

Please note the reduction of maximum performance due to connectors, cable diameter, and cable length.

#### 4. Operation and Discharge

- **End of Discharge:** Never discharge the battery below 3.3 V per cell under load. At rest, the voltage per cell should not drop below 3.75 V to avoid deep discharge, which can destroy the battery.
- **Flight/Driving Times:** Do not rely on the safety shutdown of the controller, but measure the cell voltage after short flights/drives to determine the maximum flight/drive time. Always leave about 20% remaining capacity in the battery.
- **LIPO ABC:** Proper handling of the batteries is crucial for their longevity and safety. We have developed a guide for this. Please read our LiPo ABC, which you can download at the following link: (<https://www.stefansliposhop.de/media/general/LiPoFAQV15c.pdf>)

#### 5. Connection and Polarity

- **Correct Polarity:** Always ensure the correct polarity when connecting the charger, balancer/equalizer, and controller. Check the voltage of each cell with a meter if you are unsure whether your balancer/equalizer is working correctly. Avoid short circuits at all costs.
- **High-Quality Connector Systems:** Use only high-quality and appropriate connector systems that are designed to handle the battery's load. The solder joints must be clean and stable and insulated with high-quality heat shrink tubing.

#### 6. Inspection Before Use

##### 6.1. Visual Inspection

- **Mechanical Damage:** Check the battery for cracks, dents, swelling, or other visible damage before each use. Any anomaly is an indication of a possible risk.
- **Connections and Cables:** Ensure that all connections and plugs are fully functional and free of oxidation. The insulation of the cables must not be damaged. Also, check for wear and cable breaks.

##### 6.2. Electrical Tests

- **Measure Cell Voltages:** Use a suitable multimeter or a special LiPo balancer charger to check the voltage of each cell. The cell voltages should be within a range of  $\pm 0.05$  V to ensure balanced charging and discharging.
- **Check Internal Resistance:** Measure the internal resistance of each cell with a suitable charger or measuring device. Increased internal resistance indicates an aging cell that may no longer be safely operated.

## 7. Repair, Replacement, and Disposal

### 7.1. Repair of LiPo Batteries

- **Damaged Batteries:** Never attempt to repair damaged LiPo batteries yourself. Damaged cells or housings may have internal, invisible damage that could lead to a fire. A damaged battery should always be disposed of safely.
- **Soldering:** If soldering the main power cables (e.g., new connector system) is necessary, use low-temperature soldering techniques and minimize heat exposure to the cells. Soldering should only be done by experienced professionals. Soldering directly on the cell leads is not allowed as it can destroy the battery/cells.

### 7.2. Replacement

**Aging and Performance Loss:** Replace the battery if the capacity noticeably decreases or the internal resistance significantly increases. An old battery that no longer reaches full capacity is more prone to malfunctions.

### 7.3. Disposal

- Stefansliposhop GmbH is obliged to inform you as our customers about the following in connection with the sale of batteries and accumulators: You are legally required to return batteries and accumulators to a distributor or to collection points established by public waste disposal authorities. Batteries and accumulators must not be disposed of with household waste! As an end consumer, you can return batteries and accumulators that we have supplied to you either free of charge at our sales outlet, at a municipal collection point, a collection point in the trade, or return them to us. Batteries and accumulators that contain hazardous substances are marked with the symbol of a crossed-out trash can and the chemical symbol of the respective hazardous substance.



You can also find these instructions in the operating manuals (of the manufacturers) of the products in which batteries or accumulators are used. Further information on the Battery Act can be found at the Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety: (<http://bundesrecht.juris.de/battg/index.html>)

## 8. Proper Handling

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## 9. Warranty and Liability

- **Warranty**

We provide the legally prescribed warranty claim of 24 months for our products. In the event of a warranty claim, please contact the specialist dealer where you purchased the product. Production, material, or functional defects will be rectified free of charge during this period. Further claims, such as consequential damages, are not covered.

- **Disclaimer**

Since we cannot monitor the handling, compliance with assembly and operating instructions, or the use and maintenance of the product, Stefansliposhop GmbH cannot accept any liability for losses, damages, or costs. Any claim for damages that may arise from the operation, failure, or malfunction, or is in any way related to it, is rejected. We do not assume liability for personal injury, property damage, and their consequences arising from our delivery or work. As far as legally permissible, the obligation to compensate for damages, for whatever legal reason, is limited to the invoice value of our product directly affected by the event. This does not apply where we are liable without limitation under mandatory legal provisions or gross negligence.

## 10. Contact Information

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