

Safety Precautions for SLS Lithium Polymer Batteries:

SLS Lithium Polymer batteries are designed for RC model building and drones (UAV) only. These safety precautions must be fully read before using a SLS lithium polymer battery. In case of improper handling, lithium polymer batteries can explode, burn and release toxic gases, causing burns or poisoning. Since we cannot control the proper and correct handling after delivery, we reject any liability for damages and consequential damages of any kind.

1. Always store and charge each battery in a fire-proof container, which in case of an ignition of the battery can never lead to a spread of the fire. Use the battery only for your remote-controlled flight model or vehicle or ship model. Other applications are prohibited. Always keep the battery dry and dark in a cool environment. Never expose it to direct sunlight or excessive heat. Keep the battery away from children and unauthorized persons.

2. IMPORTANT Please note the information on the number of cells, the discharge currents and the charging currents printed on the battery pack. The number of cells must be set correctly in the charger. The charging and discharging currents must never be exceeded.

3. Use ONLY brand chargers suitable for charging lithium polymer batteries. Be sure to use the correct charger. Set the number of cells as well as the charging current and the switch-off voltage on the charger ABSOLUTELY CORRECT. The charging of Lithium Polymer batteries is NOT allowed IN THE BUILT-IN CONDITION of the model aircraft, vehicle or boat and Drone. READ AND UNDERSTAND the instructions of your charger.

4. Explanation of the data on the battery using the example of a 3S1P battery with 3700 mAh and 35C / 60C discharge current and max. 3C Charge current:
3S1P means that the battery is made of 3 cells, which are soldered in series (positive pole to negative pole). The P stands for parallel and comes from earlier times, where the batteries were also soldered parallel to the serial soldering (positive pole to positive pole, negative pole to negative pole) in order to increase the capacity and the load capacity (the discharge and charging current). Today, almost exclusively serial soldered packs are used, which is why 1P.

3700 mAh means that the capacity of the battery is 3700 milliampere-hours or 3.7 ampere-hours. This number describes the "amount of current" that the battery has. In the same model, you can fly with a 3700 mAh battery longer than with a 2600 mAh battery.

11.1 V means that the battery has a nominal voltage of 11.1 V. Each lithium polymer cell has a nominal voltage of 3.7 V. This voltage is multiplied by 3 (since we have 3 cells in the battery). This gives us the nominal voltage of 11.1V. The nominal voltage is about the cell in the delivery condition, it is only about 20% fully charged. The practical operation should be finished when the rated voltage is reached. A fully charged lithium polymer cell has a voltage of 4.2V. When multiplied by 3, this results in a total voltage in the fully charged battery of 12.6V. This is also the turn-off voltage for the charger.

35C / 60C Discharge means that the battery can be discharged permanently with a maximum of 35C ($35 \times 3.7\text{Ah} = 129.5$ Amps) and can be discharged for 1 second maximum with 60C ($60 \times 3.7\text{Ah} = 222$ Amps).

3C Charge means that the battery can be charged with a maximum of 3C ($= 3 \times 3.7\text{Ah}$ 11.1 Ampere) charging current. (Lower charging currents conserve the battery).

5. Since the individual cells can easily get different voltages by charging and discharging several times, so-called balancers are used which prevent this. Always use a suitable brand balancer for loading. It may have to be set to the cell number of the battery. It is connected to the balancer cables of the battery. Our batteries have XHR balancer connections. If your balancer has other connections, use the appropriate adapter cable.

6. Always check the correct polarity when connecting the charger, the balancer and the regulator in the model. The two thick high-current cables of the battery are soldered with appropriate high-current connectors and connected to the charger or regulator in the model. The red cable is the positive pole, the black cable is the negative pole. The balancer cables are connected to each plus and minus of the individual cells. The colors of the balancer cables can also differ, then the correct polarity must be measured using a measuring device and ensure the correct connection of the balancer plug. Each battery has exactly one balancer cable more than it has cells. (for example, a 3S battery has 4 balancers).

7. Since there are different plug-in systems, the two thick high-current cables are delivered without a plug (except for small batteries with BEC plug). You need to solder high quality plugs. The plugs must be designed for the power level with which the battery may be loaded. Use only sufficiently dimensioned high quality gold plugs and pay attention to a clean and stable soldering. The following insulation may only be carried out with high-quality shrink tubing. Make sure that everything is completely shrunk when connected, and that nowhere blank parts are visible (SHORT CIRCUIT!). No blank parts should be visible when transporting or storing the battery.

8. Charge the battery only up to a maximum of 4.2V per cell, this also corresponds to the cut-off voltage of the current chargers.

Discharge the battery under operating state never more than 3,2V per cell. In non-operating state (measured without load), the voltage per cell should not be below 3.75V. A lower discharge will destroy the battery. Do not rely on the safety shutdown of the controller. First of all, you should approach the maximum flight / travel time piece by piece with only very short flights / trips and then measuring the cell tension and then set yourself a stopwatch in the transmitter. Leave approx. 20% remaining capacity in the battery. After use (empty battery), you should be able to load about 80% of the nominal capacity. The rechargeable capacity is indicated by your charger at the end of the charge process.

ATTENTION: Due to the high performance of the SLS batteries, the voltage level remains almost equally stable until the end of the discharge.

A decreased battery cannot be recognized by slowing performance or speed of the engine. If this happens, the battery is usually too deeply discharged and is destroyed (even with one-time deep discharge). Please ensure that the motor is switched off in any case (never less than 3.75v per cell in non-operating state).

If you do not intend to use the battery for an extended period of time, DO NOT store it in a fully charged condition. Store with approx. 3.8 V per cell and cool environment.

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