

Lithium iron phosphate (LiFePO₄ or LFP) batteries have been available for model aircraft for many years, although they occupy a relatively small niche compared with lithium polymer (LiPo) batteries. They are used primarily where safety, longevity, and voltage stability are more important than minimum weight.

Common cell sizes

The cylindrical cells most commonly used by aeromodellers are:

Cell designation	Diameter × Length	Typical capacity	Typical weight
10440	10 × 44 mm	300–350 mAh	~10 g
14500 (AA size)	14 × 50 mm	500–700 mAh	~18–22 g
18650	18 × 65 mm	1.1–1.8 Ah	~35–42 g
26650	26 × 65 mm	2.3–3.5 Ah	~80–95 g
32700	32 × 70 mm	5–7 Ah	~140–150 g

Prismatic LFP cells are also available in capacities from about 5 Ah into the hundreds of amp-hours, but these are generally too large for conventional RC aircraft.

Typical packs used in RC aircraft

Most model aircraft use:

- 2S (6.6 V nominal, 7.2 V fully charged)
- 3S (9.9 V nominal)
- 4S (13.2 V nominal)

The 2S pack is especially popular for:

- Receiver power
- Ignition systems on gasoline engines
- Servos rated for 6–7.4 V

Many giant-scale aircraft use 2S LiFe packs specifically because their nominal voltage closely matches equipment designed for 6 V NiMH packs while eliminating the need for a voltage regulator.

Advantages

Compared with LiPo:

- Excellent thermal stability
- Extremely resistant to thermal runaway
- Can survive thousands of charge cycles (typically 2,000–5,000)
- Very flat discharge curve
- Can remain fully charged for long periods with minimal degradation

- Lower fire risk if damaged

Disadvantages

The principal disadvantage is lower energy density.

Approximate comparison:

Chemistry	Nominal voltage/cell	Energy density
LiPo	3.7 V	180–260 Wh/kg
LiFePO ₄	3.2–3.3 V	90–160 Wh/kg

A LiFe pack of equal capacity is typically **20–40% heavier** than an equivalent LiPo.

Discharge capability

Modern LiFe cells can provide substantial current, but generally not as much as high-performance LiPos.

Typical ratings:

- Continuous: 10–30C
- Burst: 20–60C

This is more than adequate for:

- Receiver batteries
- Scale aircraft
- Sailplanes
- Glow or gasoline ignition systems

It is often inadequate for:

- High-performance electric aerobatic aircraft
- EDF jets
- F5B competition sailplanes
- High-power pylon racers

where 75–150C LiPo packs are commonly used.

Suitability for sailplanes

Given your interest in radio-controlled sailplanes, LiFe batteries are particularly attractive in several applications:

- Receiver battery packs
- Large sailplanes with numerous digital servos
- Scale sailplanes with retracts

- Self-launch sailplanes where propulsion is secondary to endurance

For pure electric-launch sailplanes, however, LiPo remains dominant because every gram saved improves climb performance and wing loading.

Charging

LiFe batteries require a charger with a dedicated **LiFe/LFP** mode.

Charge limits are:

- Nominal voltage: **3.2–3.3 V/cell**
- Full charge: **3.60–3.65 V/cell**
- Minimum recommended voltage: about **2.5 V/cell**

Using a LiPo charge program (4.20 V/cell) will overcharge and damage a LiFe battery.

For receiver and avionics applications, LiFe batteries have earned a reputation as one of the most reliable battery chemistries available in RC aviation. For propulsion systems where maximum power-to-weight ratio is the overriding objective, LiPo remains the preferred choice.