

# Do lfp batteries last longer

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„3.2V,3.6V~3.65V?,,?????,...

An LFP battery is a type of lithium ion battery that is highly stable, has a long lifespan, and tends to be more resistant to heat degradation than their other lithium ion cousins. They are also known as lithium iron phosphate, or LiFePO<sub>4</sub> batteries.

These are just some of the various types of batteries that fall into the lithium ion family. They are generally named after the chemicals used in the cathode, which is what lithium ions flow towards when the battery is being used.

Different EV battery compositions optimize different things, such as the life span, maximum charge speed, or how much energy a cell can hold. The specific chemistry that is used depends heavily on how it is being used.

For instance, batteries with manganese have very low internal resistance and can be charged pretty fast. However, these batteries tend to have shorter lifetimes.

For EV use, the most popular batteries are NMC (lithium nickel manganese cobalt oxide) and NCA (lithium nickel cobalt aluminum oxides), which combine metals with nickel and cobalt to make them last longer and hold the most energy. However, LFP batteries, also known as lithium iron phosphate, or LiFePO<sub>4</sub> (Li = lithium, Fe = iron, PO<sub>4</sub> = phosphate) are the new kid on the block.

Nerdy Aside: Why do LFP batteries promise to be more resistant against heat-related aging and degradation? Simply put, the Fe-PO bond in LFP compositions is stronger than the Co-O bond in cobalt-based batteries, so that if abused (short-circuited, overheated, etc.) the oxygen atoms are much harder to remove. This means that under stress, a LFP battery is more likely to resist rapid rises in temperature, which can result in permanent battery damage or in dire cases - start a fire.

While we're excited about the adoption of more LFP technology, we are scientists, and we do want to mention the compromises that come with using LFP packs.

On their heels came news from Ford in 2023 that they plan to switch to LFP packs in European Mustang Mach-Es and in select F-150 markets in 2024. These new LFP packs are already on the road in Standard Range Mach-Es in the US, but in limited numbers. Recurrent only has a handful in our fleet so far. Fisker Ocean is also using LFP packs in their base configuration, the Sport.

?Rivian announced a switch to LFP batteries and new cell configurations, allowing for faster production. They will start using LFPs in their Electric Delivery Vans for Amazon, and then switch over in their Standard

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Range trucks.

Since the LFP packs have lower energy density, you need a larger LFP battery for long range or mind-boggling acceleration. The larger battery adds weight and can reduce efficiency. Because of this, most automakers are only looking to use them in Standard Range and non-performance trims.

However, we will see how Ford fares with using LFP packs in their much larger, much heavier F-150s.

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