

## Proper LiPo storage for longer life

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I recently disposed of 4 LiPo batteries that had become useless due to lack of capacity... i.e. they just wouldn't hold a charge at a high enough voltage and enough capacity to be useful anymore. LiPo batteries just don't seem to last long it seems. Is it just that LiPo batteries wear out from sitting on the shelf? Everything I've seen says they should last 400-500 charge cycles. No way I use these batteries that often over the course of the 3 or 4 years they seem to last. Time to do some research.... Here's what I found.

Most folks know there are a few definite "don't do" things like running the batteries down below 3 volts per cell ... or drawing more current than they are rated for... or charging too fast... or leaving them uncharged for any lengthy period of time. Everyone expects these things will cause early battery failure. Beyond those obvious items (which I try to avoid) it seems the consensus is that the number one issue that causes early battery death is...

### **Storing the batteries fully charged... especially in a hot environment!**

Now let's think about my usual routine. As I fly my electrics I try to take the discharged packs and after a brief cool down place them onto charge and put them back in my trailer. They can be there for a week or a few months during the summer season and are usually brought into the workshop for the winter months. I.e. I have pretty much created the worst possible storage routine!

According to multiple sources such as [batteryuniversity.com](http://batteryuniversity.com), if you store a LiPo battery at 77 degrees for 1 year at full charge the battery will have lost 20% of its capacity... permanently... Warmer storage is even worse! At 100 degrees it's closer to 35%... How hot does it get in my metal trailer during those long summer days sitting on my blacktop driveway? Yikes, I think I'm killing my LiPos!

So what can we do to help extend our battery life? Well, that same fully charged LiPo only loses 6% a year if stored at 32 degrees. Or if we store at 40% charge at 77 degrees for a year the battery only loses 4% of capacity! Best of all, if stored at 40% charge rate and reduced temperatures (near freezing) we are down to only a 2% loss. So what to do...

As it turns out, my main LiPo battery charger does have a storage charge setting! On top of that I recently added a small fridge to the shop... so. My plan is that I will continue to fully charge during the summer months when I fly once or twice a week, but I will try to put all my LiPos in plastic bags and into the fridge when I get home. I don't usually have the time to bring all my batteries up to speed before I head to the field to fly during the summer months and I don't want to be unprepared when the opportunity arises. During the winter months, when my flying times are fewer and further between, I'll charge to storage levels and into the fridge for winter storage. Alternatively, I may try to just fly down to a 40% or so level (will take some trial and measurements to achieve) and start charging on arrival at the field or the night before when possible.

So, my best tip is to get some resealable plastic bags and store the LiPos in the fridge for longer life. And if you are making multiple flights, why not make the last one for about half the normal length of time before storing the battery? And don't forget the sealable bags... keep the batteries sealed until they get to room temperature as you don't want to create moisture from condensation.

Armed with this information, I am hoping to extend my LiPo battery life and get better performance for a longer period of time. Hopefully you can do the same!