HYPERION BRIEF - A123 CELLS

A123 cells use a patented "nano technology" LiFePO4 chemistry to provide an alternative to Lithium Polymer (LiPo) type batteries. Each type has its own advantages. Quality Korean-made Lithium Polymer such as Hyperion LiteStorm CX, VX, and VZ series - for example - offer the highest possible energy and power density. That means that they pack more total power per gram, and are able to discharge more power in a given time per gram compared to LiFePO4 A123. But LiFePO4 A123-Brand cells do offer some important advantages:

- SAFETY - LiFePO4 A123 cells are not prone to "thermal runaway" when subjected to over-voltage charging. As a result, it is extremely unlikely that they could catch fire, even if you - or your charger - make a mistake in settings.
- FAST CHARGE - LiFePO4 A123 cells can be safely charged at rates up to 4.3C! That means that charging can be accomplished in as little as 15 minutes! A LiPo pack takes more than twice that long, at best. If you compare a Lipo battery pack with an A123 battery pack of the same weight, you'll typically get more flight time from the Lipo pack "Per Flight". But when you consider the fast charge capability of the A123 LiFePO4 pack, you may well get much more total Flight Time per Day.
- CYCLE LIFE - A123 data states a maximum discharge rate of 30C. While the cells are capable of 30C continuous rates, voltage will drop substantially. As such, our extensive tests lead us to recommend Prop/Motor/Battery combinations such that 23C is the maximum current drawn when the A123 pack is freshly charged. Our tests show that when used at those rates the A123 packs are capable of well over 200 cycles with less than 10% drop in capacity. By comparison, the best quality Lipo packs can only guarantee 100+ cycles at similar rates.
- SHELF LIFE - In addition to their excellent cycle life, A123 LiFePO4 cells have been shown to degrade very little over a two-year period while unused. Even the best Lipo may lose 10% capacity or more over two years of storage. Poor quality LiPo (typically Chinese manufacture) may become unusable in less then a year, by comparison.
- DURABLE CONSTRUCTION - The Cylindrical A123 cell construction is more durable than typical LiPo cells, and so less likely to incur daily dents, dings, and damage from light crashes.
- TCO (total cost of ownership) - A123 LiFePO4 cylindrical cells are very reasonably priced in comparison to quality LiPo alternatives "up front". But the real value comes in over time, as the long Cycle Life, long Shelf Life, and Durable Construction all combine to lower the total cost per flight over the life of an A123 battery pack. In other words, you get a lot more flights for the money you spend. In particular, don't be fooled by the low initial cost of "cheap" LiPo packs. In many cases these packs provide even less energy density than LiFePO4 cells, can't be safely fast charged, and often last less than 20 flights before "worn out".

So does that mean everyone should rush to A123 cells, rather than high-quality LiPo. Not necessarily. It really depends on what your needs and preferences are. For applications that require maximum power and minimum weight - such as EDF Jets, "Serious 3D" Aerobatic models, Thermal Gliders, and Pylon racers - Hyperion Lithium Polymer clearly remain the best choice. But if you don't mind a little more weight (and/or less time per flight), then the A123 may offer irresistible advantages for you.

Keep in mind, too, that your setup may have to change in order to realize the best blend of performance and weight from A123 packs in your model. For example, we tested Hyperion 25e Aerobatic models with a variety of pilots. The extreme 3D pilots preferred 2500-3S VX LiPo. But several pilots - who prefer mostly "sport" aerobatics with some 3D maneuvers in the mix - preferred the 2300Mah A123 4S pack. The slight increase in weight actually worked in their favor, and the model penetrated and ignored wind better, and carried more energy through maneuvers such as large loops. Some of the "milder" pilots really liked the 3S 2300mAh A123 setup; they didn't mind the reduction in total power, and appreciated the light, simple setup and super-fast charge times – and the low cost.

NOTE that changing from 3S Lipo to 4S A123 may require other changes - such as use of an SBEC-equipped controller (Hyperion PSW series for example) rather than standard BEC - and will likely require fitting a different prop to achieve the correct balance of speed, thrust, and run time. See Right - some test data in Hyperion 25e and 40e models. >>>>>>>>>>>>>>>>>>>>>>>>>>

A123 Cells should always be Balance charged. Hyperion offers solder Battery Bars (HP-LA1100BAR, 2300BAR) which are just the right size and shape for A123 cells, and have hole locations for attaching Hyperion pack-side balance connectors.

CLICK HERE TO SEE HOW WE ASSEMBLE A123 PACKS at Hyperion for use in our own models

To see A123 1100mAh pack fit and applications for Hyperion 10e class models, CLICK HERE

A123 2300mAh Tests with HYPERION Aerobatic Models

EDGE540T 25e		Motor Type: HP-Z3019-12			
Prop Size	Cells	V	A	W	RPM
APC 13×6.5E	3S	8.7	32.1	280	6555
APC 13×8E	3S	8.5	34.5	294	6285
APC 11×5.5E	4S	11.76	31.5	371	9330
APC 12×6E	4S	11.21	38.9	436	8415

YAK54 40e		Motor Type: HP-Z4020-14			
Prop Size	Cells	V	A	W	RPM
APC 14×7E	5S1P	14.15	36.9	522	7125
APC 15×7E	5S1P	13.58	40.7	553	6705
APC 15×8E	5S1P	12.78	44.2	566	6210
APC 15×7E	5S2P	15.02	49.8	749	7275
APC 15×8E	5S2P	14.72	58.3	859	6900
APC 16×8E	5S2P	14.47	66.1	958	6525

A123 Official Documents: 1100mAh Datasheet 2300mAh Datasheet