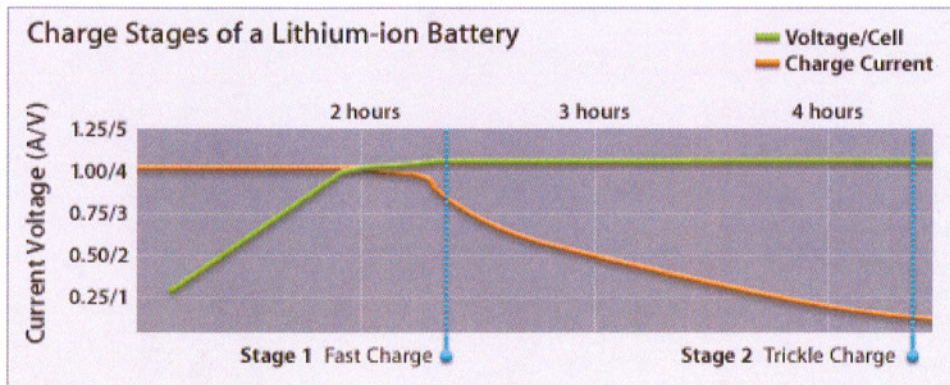# Lithium-ion Batteries

Rechargeable lithium-based technology currently provides the best performance for your Apple notebook computer, iPod, or iPhone. You can also find this standard battery technology in many other devices. Apple batteries share the characteristics common to lithium-based technology found in other devices. Like other rechargeable batteries, these batteries may eventually require replacement.

Standard Technology

Lithium-ion batteries pack in a higher power density than nickel-based batteries. This gives you a longer battery life in a lighter package, as lithium is the lightest metal. You can also recharge a lithium-ion battery whenever convenient, without the full charge or discharge cycle necessary to keep nickel-based batteries at peak performance. (Over time, crystals build up in nickel-based batteries and prevent you from charging them completely, necessitating an inconvenient full discharge.)

Charge Stages of a Lithium-ion Battery

Standard Charging

Most lithium-ion batteries use a fast charge to charge your device to 80% battery capacity, then switch to trickle charging. That's about two hours of charge time to power an iPod to 80% capacity, then another two hours to fully charge it, if you are not using the iPod while charging. You can charge all lithium-ion batteries a large but finite number of times, as defined by charge cycle.

Lithium-ion Batteries
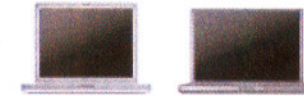
About Notebook Batteries

Learn how to maximize the lifespan and battery life of Apple notebook.

About iPod Batteries

Learn how to maximize the lifespan and battery life of touch, iPod nano, iPod classic, or iPod shuffle.

About iPhone Batteries

Learn how to maximize the lifespan and battery life of iPhone.

Battery Terms

Battery life means the time your Apple notebook, iPod, run before it must be recharged (also called "playtime")

Battery lifespan means the total amount of time your b before it must be replaced.

40%	20%	30%	20%	50%	60%	
			1 Cycle		2 Cycles	

Charge Cycle. Using and recharging 100% of battery capacity equals one full charge cycle.

A charge cycle means using all of the battery's power, but that doesn't necessarily mean a single charge. For instance, you could listen to your iPod for a few hours one day, using half its power, and then recharge it fully. If you did the same thing the next day, it would count as one charge cycle, not two, so you may take several days to complete a cycle. Each time you complete a charge cycle, it diminishes battery capacity slightly, but you can put notebook, iPod, and iPhone batteries through many charge cycles before they will only hold 80% of original battery capacity. As with other rechargeable batteries, you may eventually need to replace your battery.

How to Maximize Power Use
The length of time your battery will power your device depends on how you use it. For instance, watching a DVD will use up your notebook battery's power more quickly than simple word processing. You can follow some easy steps to maximize your notebook, iPod, or iPhone battery life.

Hot Tip
If you use your iPod, iPhone, or notebook in temperatur
95° F (or 35° C), you may permanently damage your ba
capacity. That is, your battery won't power your device a
given charge. You may damage it even more if you cha
in these temperatures. Even storing a battery in a hot en
damage it irreversibly.

On Playing It Cool
You may find that playing an iPod or using an iPhone in
environment decreases battery life. Unlike the effects of
environment, this is a temporary condition. Once molecu
battery warm up, the battery will return to its previous ca

Exercise Your Machine
Lithium-ion batteries need to be used for maximum perf
you don't use your device often, be sure to complete a c
least once a month. Click the links below to add regular
your iCal calendar.

Remind me to charge and discharge my iPod battery

Remind me to charge and discharge my notebook batte

Dispose Your Disposables
Apple rechargeable batteries provide a better solution fc
pocketbook and the planet. For instance, if your iPod we
four AA alkaline batteries and you used one pack per we
conservative), after two years you would have spent ove
in bulk) and piled up 400 dead batteries for your local re