

Nicads, Lithium-Ion and Nickel Metal Hydride FAQ's

Q: What is the difference between Nickel-Cadmium (Nicad) and Nickel Metal Hydride?

A: Nickel Cadmium rechargeable packs/cells have been on the consumer market for a few decades. They typically offer standard running times (known as "Capacity") for portable electronic devices such as Camcorders, Cellular Phones, Walkie-Talkies, Laptop Computers, etc. Up until recent time the Nicad Battery has been the only type recommended by Amateur Radio Manufacturers.

Nickel Metal Hydride rechargeable packs/cells represent a newer chemistry, and have been on the consumer market for this decade only. They provide longer running time without increasing physical size. Also, they contain no materials classified as "heavy metals", such as Cadmium. This means that they do not require the stringent disposal methods that Nickel Cadmium batteries do.

Q: Can my batteries develop a "Memory"?

A: This phrase relates to an internal symptom of some rechargeable batteries known as the "Memory Effect". This was confirmed to have existed in at least some of the older generation productions of Nickel Cadmium batteries. Basically, if the battery was not effectively & fully discharged prior to recharging, it might not deliver the full-expected run-time (capacity) during the next discharge cycle. It is important to understand that this lowering of capacity was and can be related to a number of other factors, such as: (1) charging time; (2) sensitivity of 'smart' chargers; (3) in advertent overcharging; (4) charging current; (5) battery age. Any of these factors, alone or in combination can give the impression that a battery has lost its capacity, whether the battery actually has a memory problem or not. Lithium-ion batteries do not develop the memory effect". NiMH batteries, while considerably better than their NiCd counterparts, are prone to developing "memory effect." However, proper care and conditioning over the life of a battery will significantly reduce the potential negative impacts. We are still seeing Yaesu FT207 and 209's operating quite satisfactorily on their original Nicad.

Q: What is Lithium Ion?

A: Lithium Ion is the catch phrase representing a new, lightweight rechargeable battery. Lithium Ion batteries are often supplied with cellular phones, laptop computers, and newer, compact handheld transceivers. Lithium Ion batteries typically offer even greater capacity (operating time) than Nickel Metal Hydride batteries and/or Nicads of similar size or mass. It is important to note that Lithium Ion battery cells are usually not compatible with Ni-Cd or Ni-MH cells. Whereas a Ni-Cd or Ni-MH cell is 1.2 volts nominal (Alkaline cells are listed as 1.5v nominal), a Lithium Ion battery cell is 3.6v nominal. A Lithium Ion AA-size cell **CANNOT** be used in place of an Alkaline, Ni-Cd, or Ni-MH cell. Furthermore, the discharging and re-charging characteristics of Lithium Ion products are **VERY DIFFERENT** from anything else. Lithium Ion battery products should **ONLY** be recharged with approved, dedicated Lithium Ion chargers. Basically if you stick with the Manufacturers Charger you won't go wrong.

Q: How long should a battery be charged for its initial charge?

A: NiCd and NiMH batteries should be charged for 16 hours initially, and Li-ion batteries should be charged for 5-6 hours. Thereafter, charge according to the user manual. Remember that a battery, after lying on the shelf for some time, usually takes 2-4 full charges and discharges before it achieves its full potential.

Q: Are Li-ion batteries suitable for me?

Definitely! If you are currently using Ni-MH batteries, you would be delighted to switch to Li-ion batteries. For the same battery capacity, you would definitely get a battery that is about 30-50% lighter and 20-30% smaller in size!! It is common for user to opt for a higher capacity Li-ion batteries but yet with the weight and size which he/she is used to carry.

However, be sure to ensure that your charger can charge lithium ion batteries. Price of Li-ion batteries is still pretty steep when compared to NiMH due to high demand and low production. Hopefully as demand increases, production and competition improve; the price will come closer to other types.

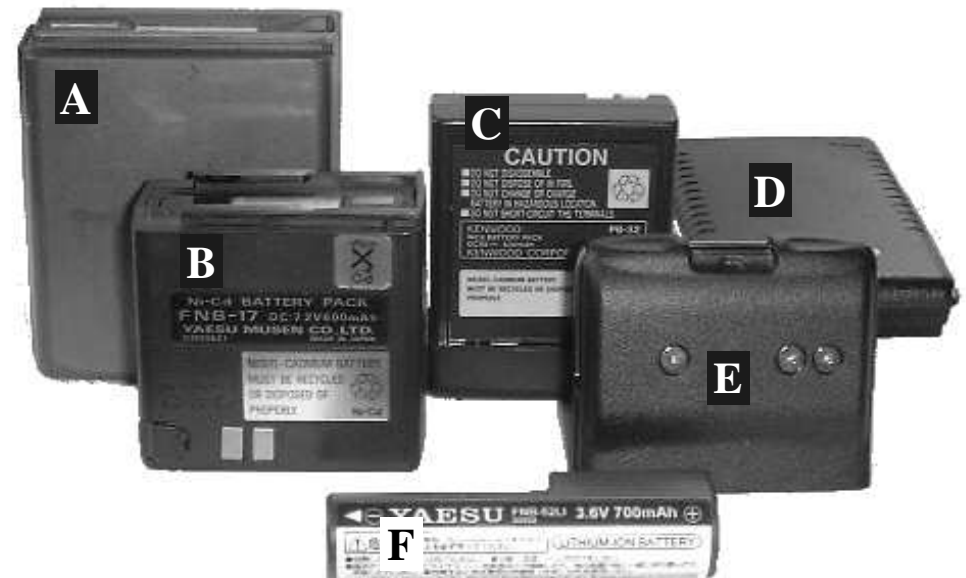
Q: So what do I get for the Extra \$\$\$?

- The weight is approximately half in comparison with a same capacity nickel-cadmium or nickel-metal hydride battery.
- The volume is 40 to 50% smaller than that of a nickel-cadmium and 20 to 30% smaller than that of a nickel-metal hydride battery.
- Does not contain any polluting substances such as cadmium, lead, mercury, etc.
- Under normal conditions, has a life of more than 500 charge/discharge cycles.
- No Memory Effect.
- Can be fully charged in 1 to 2 hours, using a constant-current/constant-voltage (CC/CV) type dedicated charger with a rated voltage of 4.20V per cell.

Q: Can I still buy a new Battery for my old Hand Held?

Good Question - Yaesu are still supplying FNB-2 and FNB-4's, which go back 20+ Years, but this is unusual and doubt there's many other Manufacturer providing such a service. Fortunately most Handheld Scanners use standard AA size Rechargeable, so you should never have this problem, but if it's a Handheld Transceiver - Buy an AA Case for the future! Just in case.. Try to buy a Scanner that uses Standard AA Batteries.

Who ever said "Bigger is Better"



Battery A - Nicad Yaesu FNB-4 - FT209 Series - 500ma 12V = **6 Watts**

Battery B - Nicad Yaesu FNB-17 - FT23R/470 Series - 600ma 7.2V = **4.3 Watts**

Battery C - Nicad Kenwood PB-32 - TH22A/79A Series - 600ma 6V = **3.6 Watts**

Battery D - Nicad Yaesu FNB-64 - VX150 Series - 700ma 7.2V = **5 Watts**

Battery E - Lithium Ion Yaesu FNB-58Li - VX5 Series - 1100ma 7.2V = **7.9 Watts**

Battery F - Lithium Ion Yaesu FNB-52Li - VX1 Series - 700ma 3.6V = **2.5 Watts**

The above Photo, Battery Specifications and information detailing battery types, really does confirm smaller is at least as good as bigger. But then on the other hand, if we for go the size issue, we could fit nearly two FNB58Li into one FNB17(2.2Amps at 7.2 Volts). And at the time we all thought FT470 size wise was perfect !