

Batteries in Nokia mobile devices



Batteries in mobile phones use rechargeable cells, which are composed of materials selected for their competence to chemically react with each other - thus translating chemical energy into electricity. When a battery is being used, the chemicals in the cell keep on reacting until they appear to be consumed. However, such chemical process can be reversed. Electrical current reverses the reactions, and thus the battery cells can be recharged. After recharging, the battery can be used again.

Rechargeable batteries are classified according to the chemical composition of the battery cells. The cells currently used in Nokia mobile devices are lithium ion (Li-Ion) or lithium polymer (Li-Polymer). Li-Polymer is a version of Li-Ion. Nickel metal hydride (NiMH) and nickel cadmium (NiCd) batteries are not used by Nokia any more.

Li-Ion batteries are lighter than NiMH and NiCd batteries - often much lighter. The energy is stored in these batteries through the movement of lithium ions. Lithium is the lightest of all metals, has the greatest electrochemical potential and provides the largest energy density per weight.

Li-Ion batteries do not suffer from the memory effect, a phenomenon found especially in NiCd batteries. The memory effect means that if a battery is repeatedly only partially discharged before recharging, it “forgets” that it has usable capacity to further discharge all the way down, resulting in degraded battery performance and shorter battery life.

Li-Ion batteries also have a low self-discharge rate of approximately 5% per month, compared with over 30% per month in NiMH batteries and 10% per month in NiCd batteries.

Built-in safety features

A Li-Ion cell has a three layer structure: a positive electrode plate (cathode) made with lithium cobalt oxide, a negative electrode plate (anode) made with special carbon, and a separator layer. Inside the battery cell also exists an electrolyte which is a lithium salt in an

organic solvent. A Li-Polymer cell uses gel-like form, and thus the cell can be packed in a foil, which allows a lighter and thinner battery. Otherwise Li-Polymer batteries are similar to those of Li-Ion.

Nokia Li-Ion batteries are also equipped with a variety of protective electronics and safety features, such as short circuit protection, including thermal fuse safety devices, safe cell construction (to prevent internal short circuits), cell safety vents, and a separate built-in safety circuit. On the market there have been counterfeit batteries i.e. pirates that lack the safety features present in genuine Nokia batteries.

Product safety, quality and reliability are Nokia's top priority. Nokia's batteries are tested against known, internationally recognized quality standards and Nokia's own stringent quality requirements. Each of Nokia's batteries complies with all known international quality standards. These include the UL2054, UL1642, IEC 61960-1/2, IEC 60950, and GB/T 18287-2000 standards.

Nokia uses only reputable, high quality battery suppliers and regularly assesses their production sites to ensure that appropriate quality systems are in place. Non-original, unbranded, or batteries produced by third parties are generally designed to be produced cheaply, and are not designed or manufactured to Nokia's high quality and safety standards.