



**> The guide to
rechargeable energy**



Rechargeables and the environment

A study carried out by Uniross and IPSOS in May 2005 shows that **82% of British and 92% French people acknowledge the importance of protecting the environment.** Few people today are unaware of the importance of positive action to protect the environment and that we can all do something to help safeguard the future of our planet.

Today, **the pollution caused by batteries is one of the most problematic aspects of household waste disposal.** They contain a number of heavy metals (Aluminium - Cadmium - Mercury - Nickel - Lead - Iron - Zinc - Calcium - Magnesium - Lithium), some of which are highly toxic for humans, animals and plants. They pollute the soil and poison ground water. It is therefore of vital importance to refrain from throwing them away in the countryside or in household waste and to **dispose of them in specially-provided recycling containers.**

Today, **5 billion** batteries (source: EPBA) are sold in Europe per year. Batteries are used every day as a mobile power supply for CD players, MP3 players, cameras, remote controls, game consoles... **and under 30% of these batteries are currently recycled!**

Using rechargeable batteries is a viable economic and environmental alternative to disposable batteries. **They can be recharged up to 500 times* and could reduce the volume of waste batteries by 500 times!**

Opting for rechargeable batteries and recycling them at the end of their life is a **simple step that all eco-citizens can take to preserve the quality of our environment.**



What are they?

Rechargeables

> The differences between disposable batteries and rechargeables

There are two types of batteries:

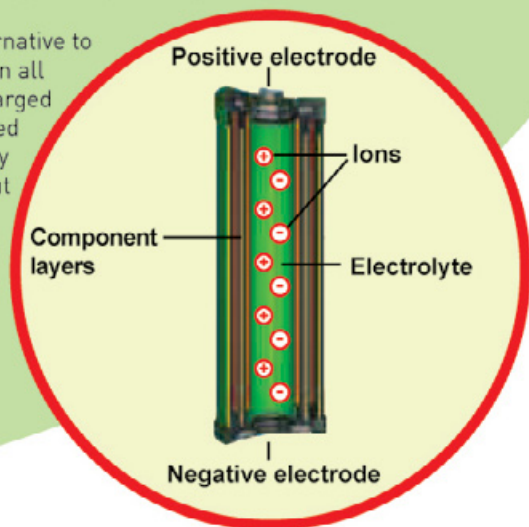
- Those that are used once and then thrown away, also called disposable or primary batteries (alkaline, saline, lithium...).
- Those that can be recharged, commonly known as rechargeables. Rechargeables are sometimes referred to as secondary cells.

Disposable and rechargeable batteries are used in **85% of European homes who now possess 5 times more devices than they did 30 years ago!** Each person uses an average of **12 batteries per year, or 28 batteries per home.**

A disposable battery is used for a certain time and then thrown away when flat. And that is exactly the problem: they only have one life cycle and, when they are completely discharged, they are thrown away and replaced by new ones.

Using rechargeables is an intelligent alternative to disposable batteries as they can be used in all battery-powered devices and can be recharged up to 500 times*! When they are discharged they can be easily recharged with a battery charger. You no longer need to worry about carrying replacement batteries!

Rechargeables last 5 times longer than alkaline in high energy-use devices like digital cameras.



A rechargeable battery is made up of component layers which are rolled around each other like tobacco leaves in a cigar. The battery has two electrodes, one at each end, connected by a conductive solution called the electrolyte. When a battery is recharged it converts the electrical energy into chemical energy. When a device requires power, **the battery converts the chemical energy back into electric energy.**

> Types of rechargeable technology

Ni-Cd rechargeable batteries:

- A mixture of Nickel and Cadmium
- The cadmium represents +/- 15 to 20% of the battery weight
- Ideal for most types of domestic devices



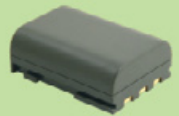
Ni-MH rechargeable batteries:

- A mixture of Nickel and Metal Hydride
- 2 to 3 times more powerful than cadmium-based rechargeables and they have no memory effect
- Ideal for usage in digital devices



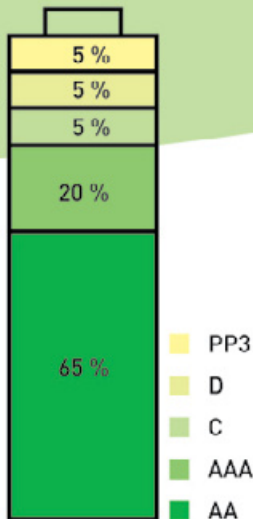
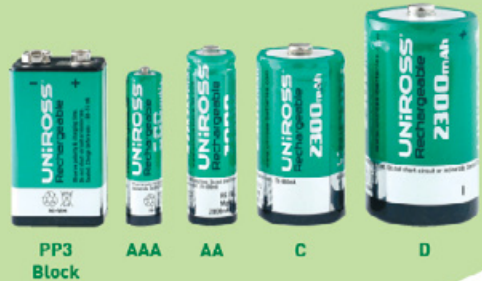
Li-Ion and Li-Po rechargeable batteries:

- A mixture of Lithium and Ion or Lithium and Polymer
- They produce 40% to 50% more power than Ni-MH rechargeables with a similar capacity, and are considerably lighter
- Ideal for mobile phones and laptops, video cameras and digital cameras.



> Rechargeable formats

Rechargeable batteries are available in exactly the same sizes as disposable ones and replace them in all devices without hesitation.



Breakdown of sales by size (Nielsen 2003)

> Capacity

The capacity of a rechargeable battery is the quantity of power that it can store and can therefore supply back to the device. It is measured in mAh (milli-amp-hours).

The higher the battery's capacity (mAh), the longer it will last before being completely discharged when in use in an electronic device.

Current research has led to the development of rechargeable batteries with capacities ranging from 800 mAh to 2500 mAh for AA size batteries.

How Rechargeables how do they work



> Chargers

All types and sizes of rechargeable battery are recharged using various types of battery charger.

Some types of battery charger are plugged into a wall socket whereas others can be plugged into your car with a carcord.

To recharge the rechargeable batteries, you simply slot them into the charger which will provide the required charge supply.

Today's battery chargers are increasingly sophisticated and provide rapid charge whilst protecting the batteries.

The most advanced chargers are fitted with a security timer, a cooling system for the rechargeable batteries and the charger circuits, a protection against over voltage as well as an over temperature detection. They can also detect if the batteries are rechargeable or if they have been inserted into the charger the wrong way round.



> Charge time

The time taken to recharge the batteries depends on the charge current supplied by the charger.

The charge current is measured in mA (milliamps), and represents the number of electrons flowing through the charger wires. It can be compared to a quantity of water flowing through a pipe.

The higher the current, the shorter the charge time. The time taken to recharge a battery also depends on its capacity. The higher the capacity, the longer the recharge time. The fastest chargers currently on the market can charge batteries in only **15 minutes!**

Rechargeables

what are the advantages?



> Environment



Rechargeable batteries can be used up to 500 times* and therefore represent a reduction in the number of batteries to be recycled to one-thousandth of its current level.

Using rechargeables helps to fight pollution and preserve the environment.

Rechargeable batteries are a vital ecological alternative to disposable batteries!

> Lifespan



A fully-recharged battery **lasts 5 times longer than alkaline batteries** in high-energy-use electronic and digital devices such as digital cameras.

> Economy



Rechargeable batteries can be recharged up to 500 times*! **Buying a charger + rechargeable batteries pack will save you hundreds of euros.**

Example: A blister of 4 AA disposable batteries currently costs around 4€. A basic rechargeable pack comprising a standard charger and 4 AA rechargeable batteries currently costs around 15€. It's a very simple calculation: even if you only recharge your rechargeable batteries 500 times... you have already saved 1985€!!

Rechargeables for what usage



> A host of devices

Rechargeable batteries are a perfect substitute for disposable batteries in all battery-powered devices, such as... MP3 players, portable CD players, digital cameras, electronic games, remote controls, radios, flashlights, torches, radio controlled toys, dictaphones and even novelty gadgets like battery-powered lollipop spinners...!



> Which rechargeable battery for which device?

AA Size	800 mAh	1300 mAh	2100 mAh	2500 mAh
Remote control	😊	😞	😞	😞
Video game console	😞	😊	😊	😊
Digital camera	😞	😞	😊	😊
Cordless telephone	😊	😊	😞	😞
PDA	😞	😞	😊	😊
CD player	😞	😞	😊	😊
Flashlight	😞	😞	😊	😊
Walkman	😞	😞	😊	😊
AAA Size	250 mAh	700 mAh	900 mAh	
MP3	😞	😊	😊	

😊 Strongly recommended

😊 Recommended

😞 Not recommended

Protect our environment. Don't just throw batteries in the bin, contact your local council to see how your batteries can end up getting recycled.

Today, only 27% of batteries and 33% of rechargeable batteries are recycled.

This guide to rechargeable energy is offered to you by UNiROSS, the European leader in rechargeable batteries and battery chargers.

UNiROSS®

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