

THE BATTERY GUIDE

– The right battery for the right purpose



STAR[®]
TRADING



BATTERIES

More and more products are powered by batteries and they fill an important purpose. Because of this, it is important to know the difference between different types of batteries. The batteryguide explains the different concepts, answers questions, and provides an overview of our range of batteries.

When you choose a battery you need to know what requirements the product has with regards to battery type, voltage, and capacity.

BATTERY TYPE

Batteries are normally divided into two categories, primary and secondary batteries.

A primary battery is a single-use battery which cannot be recharged once it has been drained. Examples of common primary batteries includes alkaline and button cell batteries.

A secondary battery, or a rechargeable battery, can be recharged after each use and thus be reused. Common secondary batteries are NiMH (nickel-metal hydride) and Li-ion (lithium-ion).

Keep in mind that if your product requires a secondary battery it cannot be replaced by a primary battery. For example, a solar powered product requires a rechargeable battery, while a LED light for indoor use could use either.



VOLTAGE

Electrical potential difference (Voltage) is measured in Volts (V). Different types of batteries yield different voltages.

- An alkaline battery yields 1,5V
- A rechargeable NiMH yields 1,2V
- A rechargeable Li-ion battery normally yields between 3,2V and 3,7V.

The voltage of a battery is the most important value you need to know to ensure that your product will work properly. Should you by accident insert a battery with a higher voltage than what is intended for the product, you risk the product breaking or even becoming a safety hazard. Should you instead insert a battery with a lower voltage, there is a risk that the product will not work as it should. In most cases, however, it works perfectly well to replace a 1,5V battery with a 1,2V.

Most batteries are marked with rated voltage. The rated voltage refers to a fully charged battery without any load.

CAPACITY

The capacity of a battery refers to the stored energy within the battery and is often measured in Ah (ampere hour) or mAh (milliampere hour). Ampere is the unit of measurement of electrical current, which means that the capacity of the battery is the maximum amount of power the battery can supply for 1 hour.

For example, a rechargeable battery with 2000mAh capacity can, theoretically, supply 2000mA for one hour, 200mA for 10 hours, or 20mA for 100 hours.



ALKALINE BATTERIES

Alkaline batteries are the most common single-use batteries today and are entirely free of environmentally hazardous metals. All of our alkaline batteries have a high capacity, aka. longlife.



Art Nr	Battery type	Amount	Voltage	Capacity*
064-72	AAA	6	1,5V	1300mAh
064-73	AA	6	1,5V	2900mAh
064-74	C	2	1,5V	7500mAh

* Capacity given refers to use in "lowdrain" devices.

BUTTON CELL BATTERIES

A button cell battery is a single-use battery which resembles a button and comes in many different sizes. For lithium batteries, the size is stated in the name of the battery, for example CR2032 - 20mm diameter and 3,2mm thickness.



Art Nr	Battery type	Amount	Voltage
066-67	AG13/LR44	6	1,5V
066-66	CR2032	6	3V
066-68	CR2450	6	3V



Choking hazard - store out of reach from children and animals!



Art Nr	Battery type	Amount	mAh	Voltage	Cycles
478-00-2	AAA	2	600	1,2V	500
478-01-2	AA	2	600	1,2V	500
478-02-2	AA	2	2000	1,2V	500
478-03	14500	1	400	3,2V	2000
478-05	18650	1	2200	3,7V	500

RECHARGEABLE BATTERIES

Rechargeable batteries, or secondary batteries, are used in our solar products where they can be charged by the sun. In common household lighting, they can replace 1,5V single-use batteries. A rechargeable battery can also be charged in a charger for the intended voltage and battery type.

NiMH is the most popular choice of rechargeable, cylindrical, batteries today. It is an environmentally friendly option, free from cadmium, which also comes in a higher capacity than single-use batteries. NiMH batteries have an output voltage of 1,2V and can almost always be used as a substitute for normal alkaline batteries with a voltage of 1,5V

Li-ion batteries have a high energy density and a voltage of 3,2V or 3,7V. These cannot replace batteries of a different voltage even if they are of the same size.

BENEFITS OF RECHARGEABLE BATTERIES

- Cheaper than single-use batteries in the long run.
- Easy to charge.
- More environmentally friendly than single-use batteries.

FREQUENTLY ASKED QUESTIONS

ARE BATTERIES AFFECTED BY DIFFERENT TEMPERATURES?

- Yes, extreme heat or cold reduces the performance of the battery.

HOW CAN I MAKE MY BATTERIES LAST LONGER?

- Remove the batteries from units that will not be used for a while. Store them in a dry, ventilated area in room temperature out of sunlight.

WHAT IS MEANT BY LIFESPAN AND CYCLE?

- The lifespan of a battery describes the amount of full charges a battery can handle before its capacity falls below a certain level of its original capacity. Usually this is referred to as cycles.

HOW DO I CHOOSE THE RIGHT CHARGER FOR MY RECHARGEABLE BATTERIES?

- Take note of the battery type you intend to buy a charger for, the most common being 1,2V NiMH. You can find such a charger cheaply in most convenience stores. There are also universal chargers which can accommodate all types of batteries and most sizes but for a higher price.

WHERE DO I DISPOSE AWAY A DEPLETED BATTERY?

- Batteries have to be recycled in designated areas and recycling sites.



TIPS AND ADVICE

- Store the batteries in their packaging until they are used. They are perishables.
- For safety reasons, you should not mix new batteries with old ones or batteries of different brands in the same product.
- The capacity of an alkaline battery depends on the drain current. The capacity will be higher with low drain compared to high drain. For other types of batteries the effect of drain current is not this big as for an alkaline battery.
- Remember to always place the + and - poles in the right direction so as to not cause a short circuit.
- When you need to replace a rechargeable battery but cannot find one of the exact same mAh, you can use the closest comparable battery in our range.
- Remember that rechargeable batteries self-discharge, but can easily be recharged.



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