Battery Catalogue 2014

Panasonic

Creating New Life with Energy

Creating New Life with Energy

Batteries are essential to daily life. All around us, in the devices we need to work and play, Panasonic energy is helping us not to live, but to flourish. For more than 90 years, we've been creating products most trusted for performance, safety, and reliability. Our technology is driven by continuous research and development as we find new ways to extend endurance. Passion for quality has led to the supply of over 170 billion dry-cell batteries* to more than 120 countries, establishing Panasonic as the premier brand for convenience and value. With superior technology and a firm commitment to sustainability, we're leading the world to new life and new possibilities. * As of March 2014

Leading Energy Solutions for the Future

Panasonic's vision for the future centres on the need to develop products that offer greater convenience, a higher level of performance, and improved environmental sustainability. And we're already delivering on that promise. Some recent examples include the supply of next-generation lithium-ion batteries for Tesla Motors' electric vehicles, the development of wireless charging devices for mobile users, and our ever-increasing involvement in solar energy—and how we can use it to help people in remote areas. It's the dawn of a new and exciting era for Panasonic and the global community.

Next-generation lithium-ion batteries for Tesla Motors

Revolutionary wireless mobile charging technology for cafés

Efficient solar lanterns for people without power access

Ultra-reliable battery power for space exploration

Innovation on the World Stage

More than 170 billion dry batteries sold in 120 countries.
Projected sales of 200 billion units by 2018.
What's the secret to Panasonic's success?

170

0%
Pb Lead
Hg Mercury
Cd Cadmium
ADDED

Pb-free zinc can results in Manganese batteries with no mercury, cadmium, or lead
(Produced in Polish and Indonesian factories from April 2014)

13 Sales bases in 13 countries

19 Production bases around the world

JAPAN QUALITY

Japanese Technology
Trusted Worldwide for Quality

Stringent quality control processes and advanced production techniques are backed by our long experience in the battery industry. Consumers have trusted Panasonic batteries for consistently high quality for more than 90 years.

EVOLTA product inspection system

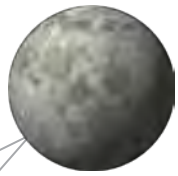
Higher Quality, Superior
Performance, Better Protection

Research into every aspect of battery design, from materials development to production processes, has opened doors to higher performance and better levels of safety.

Assembly line for lithium-ion batteries

120 Panasonic batteries are sold in more than 120 countries

Panasonic Batteries by Numbers



billion

Assuming a 5 cm average length and laid end-to-end, an accumulated total of 170 billion dry batteries…

… would extend for a distance of 8,500,000 km.

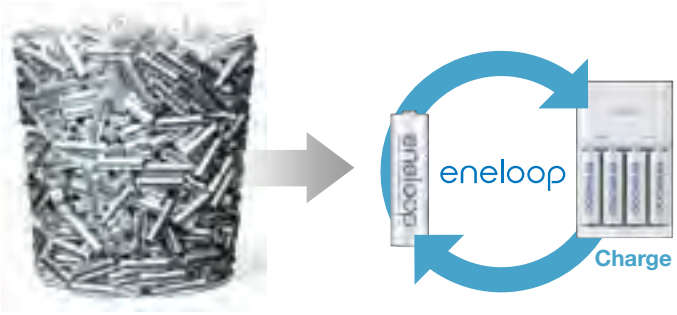
8,500,000 km

11 That's eleven return trips to the moon.

300 million

Over 300 million eneloop rechargeable batteries shipped

2,100 Number of times eneloop batteries can be recharged



Historical Highlights

Take a look at the events that shaped Panasonic's remarkable 90-year evolution.

1923	Developed and released cannonball-shaped battery-powered shell lamp Released the Excel Dry Battery for shell lamp
1931	Started in-house dry-cell production in Osaka, taking over the Komori dry-battery factory
1935	National Storage Battery Co., Ltd. established Matsushita Dry Battery Co., Ltd. established
1937	Automotive lead-acid batteries released
1954	Released National Hyper, Japan's first fully metal-jacketed dry battery
1963	National Hi-Top manganese dry batteries released
1964	Commenced production of Cadnica Ni-Cd batteries
1967	Alkaline batteries released Developed compact sealed lead-acid batteries
1969	Released National Neo Hi-Top manganese dry batteries
1970	Released Pananica Ni-Cd batteries
1971	Developed lithium primary batteries (Graphite Fluoride BR line)
1979	Matsushita Battery Industrial Co., Ltd. established
1980	Started production of the world's first amorphous silicon solar cells
1987	Released Ultra Alkaline and Panasonic Alkaline batteries
1989	Developed nickel-metal hydride batteries
1991	Released mercury-free manganese batteries
1992	Released mercury-free alkaline batteries
1994	Lithium-ion batteries developed Sales of residential solar power system commence Started production of cylindrical-type lithium-ion batteries
1997	Production of HIT® photovoltaic modules begins
1999	Started production of lithium-polymer batteries
2000	Sales of the world's first double-sided solar module, the HIT® Double, commence
2004	Started mass production of Ford Escape Hybrid battery system Mass-production of battery module for Honda begins
2005	Rechargeable eneloop released to the market
2008	Released EVOLTA alkaline dry batteries Panasonic Corporation Energy Company established Released Rechargeable EVOLTA nickel-metal hydride batteries
2009	Developed multi-purpose lithium-ion battery modules
2010	Lithium-ion standard battery system mass-production commences Started mass-production of lithium-ion batteries for HEV Suminoe plant completed
2013	Released Solar LED Lantern

Information is correct as of March 2014.

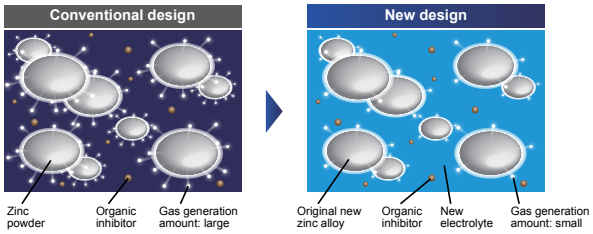
The Pinnacle of Alkaline Battery Technology

Panasonic EVOLTA and Alkaline cells are a better class of battery. Intensive research and development has yielded three unique technologies: Anti-Leak Protection to prevent damage to appliances, Triple Tough Coating to reduce contact resistance for greater reliability, and Extra Power Formula to maintain power for longer in high-drain devices. Our alkaline family has improved resistance to impact and short-circuit, and delivers high performance with industry-leading safety levels. For endurance and reliability in high-current applications, Panasonic is clearly the best choice.

Unique Gas-Suppression Technology

Panasonic EVOLTA and Alkaline batteries feature special technology that's designed to suppress the amount of gas generated when a battery is over-discharged or stored for an excessively long period. Less gas buildup means less chance of structural failure, rupture, and possible harm to your family and your appliances.

For EVOLTA **For Alkaline**



Independent Tests Prove Highest Leak Resistance*

Independent testing for battery leakage resistance conducted by Intertek, a world-leading certifications laboratory has proven Panasonic Alkaline batteries to be the most resistant to leaks in high-temperature, high-humidity conditions when the battery is in an unused state after a long period in storage.

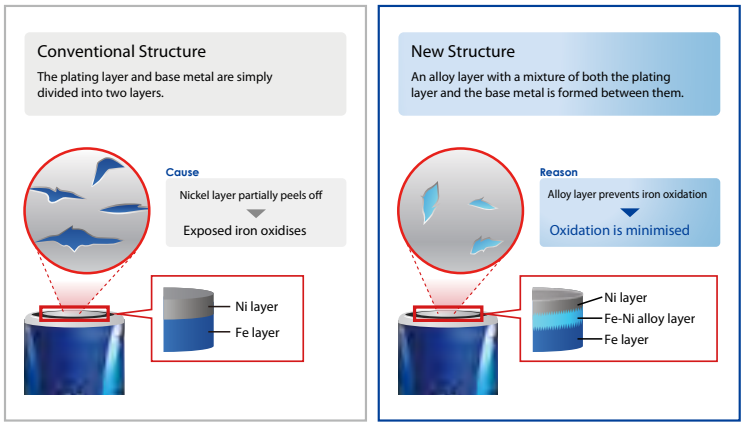
QUALITY & PERFORMANCE
Intertek

* Competitive alkaline AA batteries of major brands in ASEAN countries were used .

Triple Tough Coating Delivers a Smoother Energy Flow

TRIPLE TOUGH COATING

Everybody has experienced the frustration of poor battery contact. In conventional batteries, contact resistance on the terminals can build up and cause the nickel layer to peel off. The result is a non-functioning device. EVOLTA's Triple Tough Coating resolves the problem with an iron/nickel-plated alloy on the negative terminal that improves adhesion and reduces contact resistance. The result is enhanced energy flow and longer battery life.

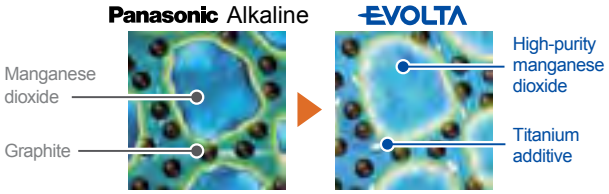


Three Technical Evolutions of EVOLTA

Material Evolution

New High-Reactivity Materials

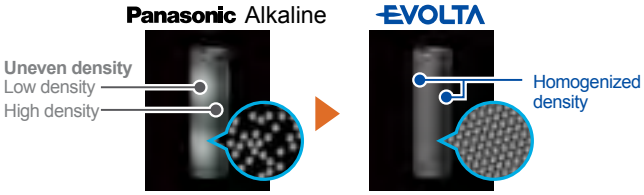
New and improved materials more efficiently supply energy to power-hungry devices. The development of high-reactivity materials has enabled consistent current delivery for longer periods. We call it Extra Power Formula, and it's your guarantee of dependably high performance.



Process Evolution

Ultra-High-Density Filling Technology

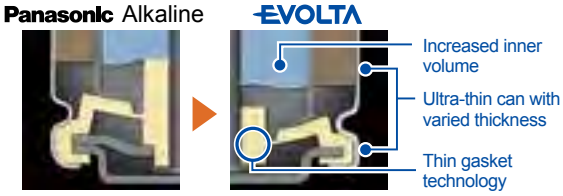
If the density of the filling materials inside a battery is inconsistent, performance can suffer. The development of new materials has led to uniform, homogenized filling density in EVOLTA batteries for superior performance.



Structure Evolution

Advanced Structural Design

EVOLTA features an improved structure to reduce the bulk of the gasket and can. This provides more space for active ingredients for longer-lasting performance. A strong internal structure and tough outer coating has resulted in very high impact resistance with a lower rate of defective conductivity after dropping. Short-circuit protection reduces the chance of malfunction when polarities are accidentally reversed.



Where does EVOLTA come from?

Evolution + Voltage = EVOLTA

EVOLTA is Panasonic's premium alkaline battery

Store Batteries Safely for Up to 10 Years

You can depend on Panasonic Alkaline and EVOLTA batteries to retain high power performance even after very long periods in storage. High-quality materials work to prevent degradation while Anti-Leak Protection minimizes the chance of leakage to ensure long-life stability before use.

PROTECTS POWER FOR UP TO 10 YEARS *

* When unused and properly stored.

No.1 for Performance and Endurance

The EVOLTA concept is a combination of “voltage” (high power) and “evolution”, or how our technology has evolved to become preeminent in the industry. EVOLTA is not only the No.1 Panasonic battery; it consistently outperforms our competitors’ premium products in commonly accepted performance tests.

EVOLTA

Premium Alkaline

Digital camera | Strobe | Electric toothbrush | Personal care appliances | Shaver | Mobile recharger | Portable radio | Electronic organiser/ dictionary | Wireless mouse | Game remote control | Radio control car | Battery-powered toys | LED torch lights | Bulb torch lights | Wall clock | Remote control

AA

LR6EG/2B

AA

LR6EG/4B

AA

LR6EG/8B

AAA

LR03EG/2B

AAA

LR03EG/4B

AAA

LR03EG/8B

D

LR20EG/2B

C

LR14EG/2B

9V

6LR61EG/1B

Panasonic Manganese for Longer Endurance in Low-Current Applications

Panasonic’s manganese batteries are an economical and long-lasting energy solution for low-drain devices in intermittent use, such as remote controllers.

For Versatile, Safe, Long-Lasting Power

Panasonic Alkaline batteries can be used in a wide range of appliances, from low-drain devices such as remote controls to high-energy-draw camera strobes and radio-controlled cars. High-quality Alkaline cells promise stellar performance, exceptionally long life, and enhanced safety to protect you and your family.

Alkaline

Digital camera · Strobe · Electric toothbrush · Personal care appliances · Shaver · Mobile recharger · Portable radio · Electronic organiser/ dictionary · Wireless mouse · Game remote control · Radio control car · Battery-powered toys · LED torch lights · Bulb torch lights · Wall clock · Remote control

AA

LR6T/2B

AA

LR6T/4B

AA

LR6T/8B

AA

LR6T/12B

AA

LR6T/20B

AAA

LR03T/2B

AAA

LR03T/4B

AAA

LR03T/8B

D

LR20T/2B

C

LR14T/2B

9V

6LR61T/1B

Manganese – Window Design

Portable radio · Battery-powered toys · LED torch lights · Bulb torch lights · Wall clock · Remote control

Blister

Extra Heavy Duty

AA

R6NP/4B

AAA

R03NP/2B

D

R20NP/2B

D

R20NP/4B

C

R14NP/2B

C

R14NP/4B

9V

6F22NP/1B

AA

R6NP/12B

Heavy Duty

AA

R6DP/4B

D

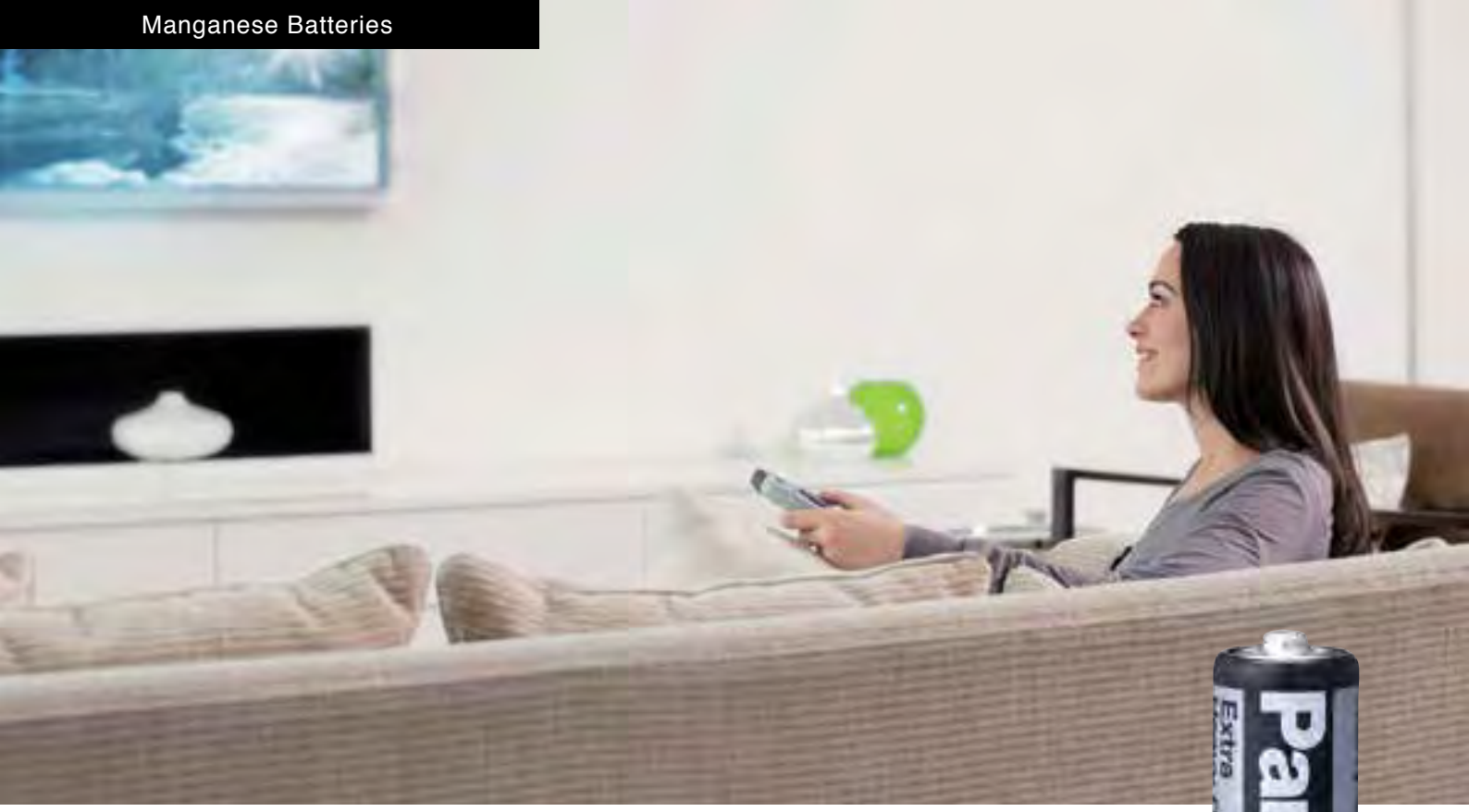
R20DP/2B

C

R14DP/2B

9V

6F22DP/1B



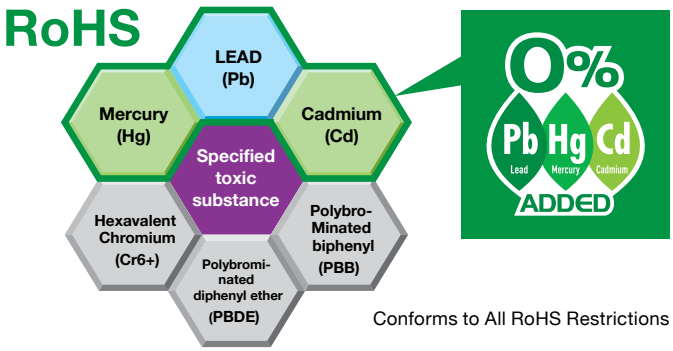
Safe, Eco-Friendly Manganese Power

The difference between Panasonic and conventional manganese batteries is clear. Advanced design and materials selection, better production techniques and more stringent quality control result in superior safety and performance, even after many years in storage. And unlike many other brands, our eco-friendly manganese cells do not contain the three major specified toxic substances. That's a huge win for you and the environment.

An Advanced Approach to Protecting You and the Environment

Now with Zero Lead Added

Panasonic released its first mercury-free battery back in 1991. Now it's among the first in the world to eliminate lead from its design. Our manganese battery family does not contain lead, cadmium, or mercury. This not only protects you as you're using the product, it also protects the environment after battery disposal.



Conforms to All RoHS Restrictions

New and Specialised Zinc-Alloy Can

Our manganese battery series overcomes traditional engineering challenges to successfully combine advanced technology and high quality with low cost. A key feature is the new zinc-alloy can, which is not only stronger than conventional cans, but much more resistant to corrosion as well.

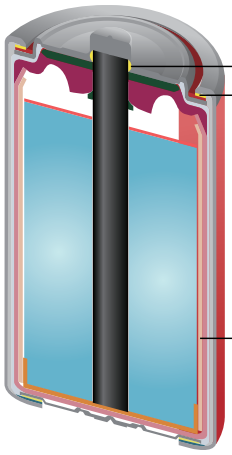
Note: Production of manganese batteries with no lead, mercury, or cadmium commenced in April 2014 in our Polish and Indonesian factories.

Industry-Leading Anti-Leak Protection

Improved Leakage Resistance for Safety

We protect the people, equipment, and moments that are important to you with industry's most advanced leak protection technology. While gas buildup is a primary cause of rupture and leakage in alkaline batteries, it is structural weaknesses in conventional manganese cells that cause the most problems. Panasonic answers the toughest engineering challenges with an extremely robust design that incorporates a stronger collector rod sealing structure, nylon inner tube protection, and a metallic outer can.

For Manganese



Reasons for Manganese Battery Leakage	Preventive Technologies
1 Leaks via the carbon rod (collector) or zinc can	1 Stronger sealing structure  Special sealant is applied in two places
2 Leaks due to zinc can wear	2 Inner tube used (Covering the zinc can periphery with a nylon tube)
3 Leaks due to zinc can damage caused by external pressure	3 Metallic outer can

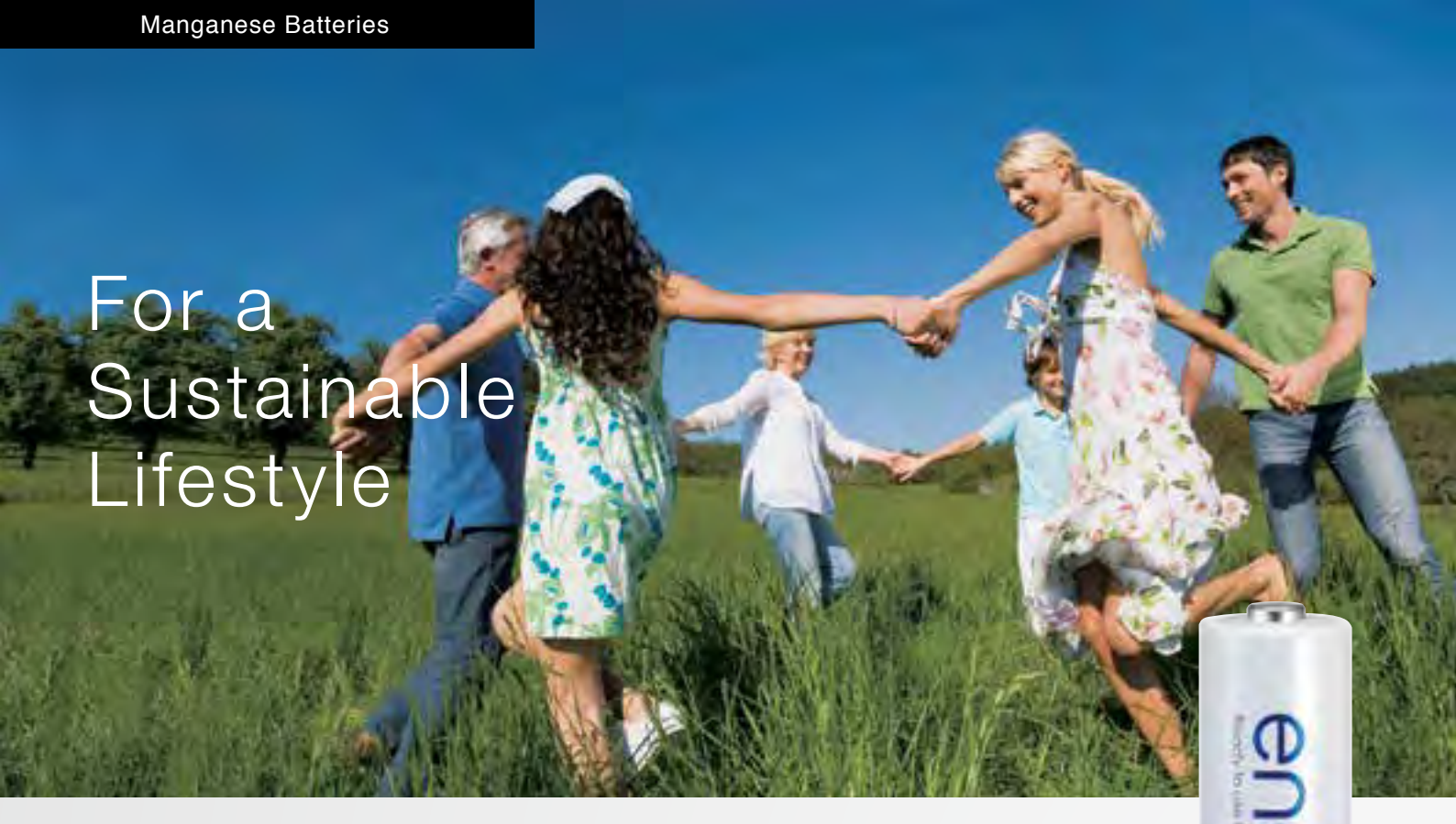
Dependable Performance in the Harshest Climates

Works in heat and cold

While most batteries work acceptably well in mild weather, performance can plunge dramatically in harsh conditions. Through use of high quality materials and with exceptionally tough engineering, our manganese batteries maintain 100% consistent voltage in temperatures as low as -10°C (14°F) right up to 45°C (113°F) according to in-house testing. In fact, performance in these conditions was almost identical to operation at a comfortable 20°C (68°F). For users in hot or cold locations, Panasonic manganese is the smartest choice.

	Original (20°C)	Low Temperature (-10°C)	High Temperature (45°C)
Panasonic	100	100	100
Company E	100	83	100
Company G	100	37	84

Note: Result based on a Panasonic in-house test with a 20°C index set to 100.



For a Sustainable Lifestyle

Make the Change to eneloop

Take a fresh look at rechargeable eneloop, the world's leading alternative to conventional dry cell batteries. It offers similarly high performance and long life, but can be reused up to 2,100 times*1. And thanks to extremely low self-discharge capabilities, pre-charged eneloop can be used immediately or stored for up to five years while retaining up to 65%*2 capacity. As well as delivering convenience, economy, and high voltage performance, eneloop is good for the environment. So if saving money, time, and nature's ecology sounds good, make the change to a sustainable lifestyle.

Safe for You and the Environment

Benefits of Both Technologies

Ready-to-use eneloop combines the best aspects of dry cell and rechargeable Ni-MH technology. They're convenient, durable, and storable for long periods, yet can be reused again and again.

Recharge Up to 2,100 Times

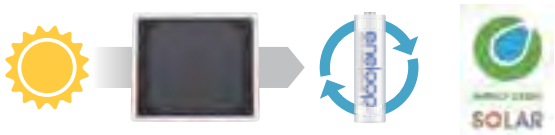
Your initial investment is quickly recovered, with eneloop returning an impressive 2,100*1 charges over an average lifespan. Depending on usage, this could equal years of trouble-free service.

Ready to Use After Five Years in Storage

Even after five years in storage, eneloop retains up to 65%*2 of its original charge. This makes eneloop ideal for use in portable radios, remote controllers, and torches stored for emergencies.

The Green Certification System and eneloop

As part of our participation in the Green Certificate System, eneloop batteries are charged with solar-generated power prior to sale,*3 helping in our aim of creating a Clean Energy Loop.



*1 Battery life based on testing method established by IEC61951-2 (7.5.1.3). Varies according to conditions of use. *2 Capacity retention based on testing method established by IEC61951-2 (7.3.2) when stored at 20°C (based on Panasonic's estimation). Varies according to conditions of use and compared with minimum capacity. *3 Through the green power certification system.

One of the Best-Loved Global Battery Brands

Over 300 Million Cells Shipped with 95% Customer Satisfaction*

Our rechargeable battery technology has matured very rapidly, and more people are making the change to eneloop on the recommendation of family and friends. With eneloop, the days of "memory effect" are gone, as is the need for a time-consuming refresh function—you can quickly and conveniently recharge any time, even if the batteries are at different stages of depletion. The long life, high power, and value for money has seen eneloop gain even more ground, with Panasonic shipping over 300 million cells to more than 60 countries to date. That's a big win for the environment as well as your pocket.

High Customer Satisfaction

According to a recently conducted in-house survey of our users, eneloop attracted higher than 95% customer satisfaction—testament to Panasonic's superior design and stringent process controls. Users commented on the reliability, consistency of quality, and long endurance they experienced when using eneloop in a variety of appliances.

Higher than 95% Satisfaction

*Based on an in-house survey of American, German, Chinese, and Japanese users.

A Critical and Commercial Success

Rechargeable eneloop's functionality and ease of use has attracted accolades from the world's leading design organisations ever since its debut in 2005. Rechargeable eneloop has been honored by such prestigious institutions as the Good Design Awards of Japan, the Japan Package Design Awards, and iF of Germany, along with recognition from the Australia International Design Awards, the IDEA Design Awards (USA), and the Asia Design Awards.

Good Design Award (2006)	Gold Prize
Good Design Award (2007)	Grand Prize (eneloop universe)
Japan Packge Design Award (2007)	Gold Prize
Australian International Design Awards (2009)	Design Award
iF Design Award (2009)	Grand Prize (eneloop universe)
DFA2010 ASIA Design Award (2010)	Grand Prize
IDEA2011 Industrial Designers Society of America (2011)	Bronze Prize

Award-Winning Products Throughout History

eneloop
Ready to use Rechargeable Battery TM

Low Self-Discharge for Multi-Use

- Up to 2,000 mAh capacity
- Recharge up to 2,100 times

Recharge Up to 2100 times | Capacity up to 2000 mAh [AA] | Capacity up to 800 mAh [AAA] | Capacity Retention 65% after 5 years

eneloop

Digital camera | Strobe | Electric toothbrush | Personal care appliances | Shaver | Mobile recharger | Portable radio | Electronic dictionary/ organiser | Wireless mouse | Game remote control | Radio control car | Battery-powered toys | Bulb torch toys | LED torch lights | Bulb torch lights | DECT phone

AA

BK-3MCCE/4BT

AA

BK-3MCCE/2BT

AAA

BK-4MCCE/4BT

AAA

BK-4MCCE/2BT

eneloop Charger

Smart & Quick Charger

K-KJ16MCC4
(Charger : BQ-CC16)

Basic Charger

K-KJ18MCC2
(Charger : BQ-CC18)

eneloop pro™

High Capacity for High-Drain Devices

- Up to 2,550 mAh capacity
- Recharge up to 500 times

Recharge Up to 500 times | Capacity up to 2550 mAh (AA) | Capacity up to 950 mAh (AAA) | Capacity Retention 85% after 1 year

eneloop pro

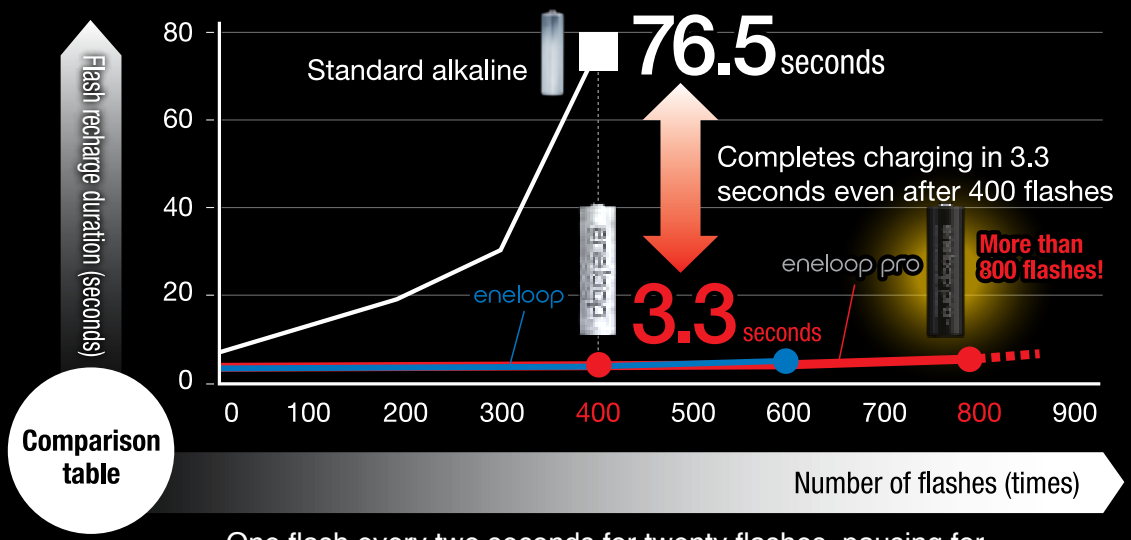
AA

BK-3HCCE/4BT

AAA

BK-4HCCE/4BT

Comparison of number of flashes and recharge duration of external flash



One flash every two seconds for twenty flashes, pausing for 10 minutes (25% flash power at 1 Hz). Condenser charging time measured every one-hundredth flash.

Charger Information Chart

eneloop Rechargeable Nickel-Metal Hydride Battery		Smart & Quick Charger BQ-CC16 K-KJ16MCC		Basic Charger BQ-CC18 K-KJ18MCC	
Battery Type		Ni-MH		Ni-MH	
Charging Time		**1 pc. / 2 pcs.**	**3 pcs. / 4 pcs.**	**2 pcs.**	**4 pcs.**
eneloop	AA	2 hrs.	4 hrs.	10 hrs.	10 hrs.
	AAA	1.5 hrs.	3 hrs.	8.5 hrs.	8.5 hrs.
eneloop pro	AA	2.5 hrs.	5 hrs.	12 hrs.	12 hrs.
	AAA	2 hrs.	4 hrs.	10 hrs.	10 hrs.
eneloop lite	AA	1 hr.	2 hrs.	5 hrs.	5 hrs.
	AAA	1.25 hrs.	2.5 hrs.	7 hrs.	7 hrs.
Specification					
Input					
Charging output		DC1.5 V 550mA x 4 / 275mA x 4		DC 1.5 V AA 200mA x 2 / AAA 100mA x 2	
Charging control		Smart Charge/-ΔV / Timer		Timer	
Indicator		LED x 4 Charging: ON, Full charged: OFF		LED x 2	
Charger battery		AA x 1, 2, 3, 4 / AAA x 1, 2, 3, 4 cells		AA x 2, 4 / AAA x 2, 4 cells	
Dimensions (approx.)					
Weight (approx.)		97 g		87 g	

Rechargeable Battery Information Chart

eneloop Rechargeable Nickel-Metal Hydride Battery

	eneloop	eneloop pro
Capacity (AA)	up to 2,000 mAh	up to 2,550 mAh
Recharge	up to 2,100 times	up to 500 times
Type	Low Self-Discharge for Multi-Use	High Capacity for High Drain Device
Recommended Equipment	High-Drain Device: Digital Cameras, Beauty & Health, Games & Toys, Torch Lights; Mid-Drain Device: Daily Use	High-Drain Device: DSLR Flash, Radio Control Cars, Wireless Devices, Games & Toys, Torch Lights; Mid-Drain Device: Daily Use

Usage time (AA)	DSLR Flash	Radio Control Cars	Digital Cameras	Beauty & Health	Wireless Devices	Games & Toys	Torch Lights	Toys	DECT Phones	Daily Use
eneloop	Approx. 1.5 hours	Approx. 2 hours	Approx. 2 hours	Approx. 5 hours	Approx. 5 hours	Approx. 5 hours	Approx. 5 hours	Approx. 30 hours	Approx. 30 hours	Approx. 2 years
eneloop pro	Approx. 1.8 hours	Approx. 3 hours	Approx. 3 hours	Approx. 6 hours	Approx. 6 hours	Approx. 6 hours	Approx 6 hours	Approx 35 hours	Approx 35 hours	Approx. 2 years
Alkaline Battery	Approx. 1 hour	Approx. 1 hour	Approx. 30 minutes	Approx. 4 hours	Approx. 4 hours	Approx. 4 hours	Approx. 4 hours	Approx. 30 hours	Approx. 30 hours	Approx. 2 years

Battery runtime measured beginning from charged state. Endurance varies depending on usage conditions, model used, ambient temperature, and condition of equipment.

High-Quality Specialist Energy Solutions

From watches to calculators to cameras and hearing aids, the Panasonic family of specialist battery cells is trusted for quality, performance, and value for money.

Lithium Coin

Panasonic lithium coin batteries provide long-lasting power in a variety of devices, from keyless-entry fobs to toys.

CR-2016PT/1B

CR-2025PT/1B

CR-2032PT/1B

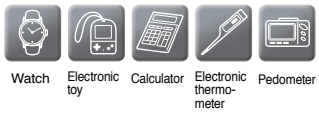
CR-2016/5BN

CR-2025/5BN

CR-2032/5BN

Micro Alkaline

In appliances such as watches and calculators, Panasonic Micro Alkaline has more staying power than other brands.



LRV-08

LR-44PT/1B

LR-43PT/1B

LR-2B

Photo Lithium

Combines lightweight materials with lithium technology to create a long-lasting energy source for cameras and other devices.

CR-2W/1BE

CR-123AW/1BE

2CR-5W/1BE

Zinc Air – Hearing Aid Batteries

Offering up to 20% more capacity than previous models, Zinc Air batteries are designed for use in next-generation hearing aids.

Hearing aid

PR-230HEP/6C

PR-13HEP/6C

PR-312HEP/6C

PR-675HEP/6C

Cordless Phone Batteries

Panasonic offers a comprehensive range of dependable Ni-MH batteries to suit a big variety cordless telephone brands.

Cordless phone

HHR-P104A/1B

HHR-P105A/1B

HHR-P301E/1B

Energy Solutions for Every Application

How to read the table

1. This table should be used as a guideline only. If individual devices specify a particular battery type, please use the specified type.
2. ● : Marketed sizes
3. ◎ ▸ ○ : Recommended in this order.
   △ : Not recommended due to insufficient battery performance.

	Primary Batteries			Rechargeable Batteries	
					
	EVOLTA	Alkaline	Manganese	eneloop	eneloop pro
D	●	●	●		
C	●	●	●		
AA	●	●	●	●	●
AAA	●	●	●	●	●
N		●			
9V	●	●	●		
Digital camera/ Strobe	○	○	△	◎	◎
Electric toothbrush	◎	◎	△	◎	○
Personal care appliances	◎	◎	△	◎	○
Shaver	◎	○	△	◎	○
Mobile recharger	◎	○	△	◎	◎
Portable radio	◎	◎	○	◎	○
Electronic organiser/ Electronic dictionary	◎	○	△	◎	○
Wireless mouse	◎	◎	△	◎	○
Game remote control/ Radio control car	○	○	△	◎	◎
Battery-powered toys	◎	○	○	○	○
LED torch lights	◎	◎	○	◎	○
Bulb torch lights	◎	○	○	◎	○
Wall clock	◎	◎	◎	△	△
Remote control	◎	◎	◎	△	△
DECT phone	△	△	△	○	△

Please follow instructions specified in your appliance's operating manual. Battery cannot be used with some devices.

Choosing the Right Battery

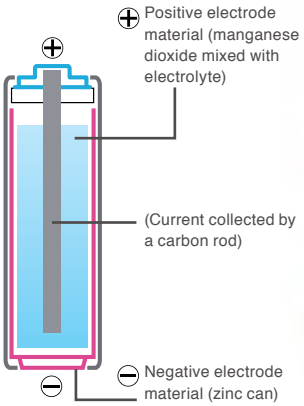
What's the difference between alkaline, manganese, and Ni-MH batteries?

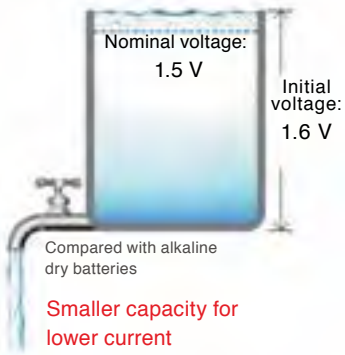
Primary Batteries

Manganese

For devices requiring a small current load, such as remote controllers

Dry batteries essentially consist of three materials: metal, metal oxide, and electrolyte. Manganese dry batteries use manganese dioxide for the positive electrode, zinc chloride (or ammonium chloride) for the electrolyte, and zinc for the negative electrode.

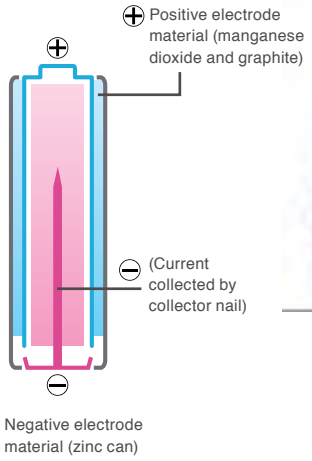


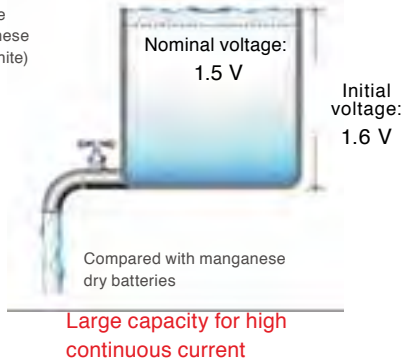


Alkaline

Suitable for devices that use high continuous current

Alkaline batteries are designed to produce a larger current than manganese dry batteries. This is because the electrolyte consists of potassium hydroxide, an alkaline-aqueous solution that enables a high flow of current.



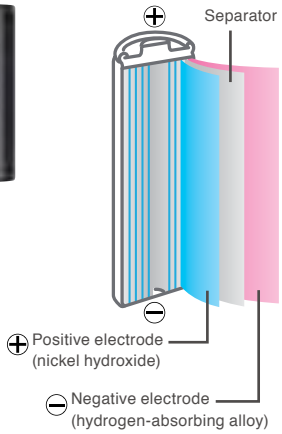


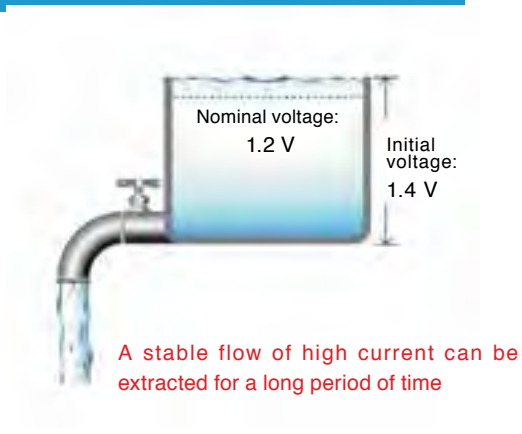
Rechargeable Batteries

Ni-MH batteries

Suitable where high current and economy is needed

Nickel-metal hydride batteries allow a stable flow of high current to be extracted, yet they can also be recharged and reused repeatedly. They use nickel hydroxide for the positive electrode, and a hydrogen-absorbing alloy that soaks up and releases hydrogen at high levels of density for the negative electrode.

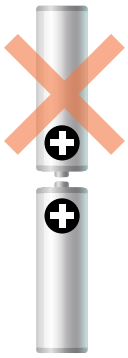




Hints and Tips for Safe Operation

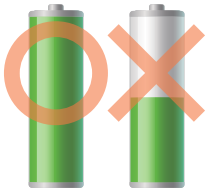
Avoid Installing Batteries with Polarities Reversed

If batteries are installed improperly, they can become charged. This causes gas to build up, raising the internal pressure. This could lead to potentially dangerous overheating, leakage, rupture, and possibly result in personal injury.



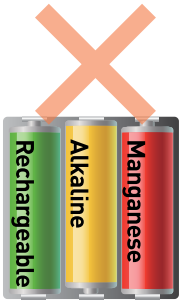
Recharge Ni-MH Batteries When Fully Depleted

It is best to recharge your Ni-MH batteries after they have been fully discharged. Doing so may provide longer usage and prolong the life of the product. When recharging is complete, it's also a good idea to remove the batteries from the charger as soon as possible. Remove the charger from the electrical outlet when batteries are replenished.



Use the Same Battery Type

When it's time to swap batteries, be sure to replace all of them at the same time using the same battery type. Using different types (such as a mix of alkaline and manganese batteries) may not only shorten service life, but could also result in battery leakage and rupture.



What to Do in Case of Leakage

If a battery leaks due to accidental misuse, and electrolyte (battery fluid) comes into contact with your eyes, rinse them well with water and seek medical treatment immediately. If the electrolyte comes in contact with skin or clothing, rinse the exposed area thoroughly with water.

Don't Short-Circuit Your Batteries

If batteries are accidentally short-circuited, excessive current is generated instantaneously resulting in overheating and possible rupture. Avoid letting your batteries come into contact with metal objects such as necklaces, car keys, or paperclips—in other words, take care storing your batteries.

Never Charge Primary Batteries

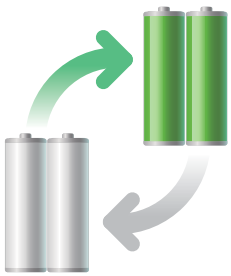
Charging primary batteries is highly dangerous and may result in injury. Recharge only Ni-MH batteries in an approved charging device. If Ni-MH batteries are charged with a device not specifically designed for that product, the battery may overheat, rupture, and leak.

Avoid Rough Treatment

Try to handle your batteries with care. Avoid damaging the label, and don't expose them to excessive heat. Do not disassemble, modify, or solder the battery, and don't immerse the battery in liquid. Doing so may result in short-circuit, battery rupture, leakage, and possible injury.

Replace all Batteries at the Same Time

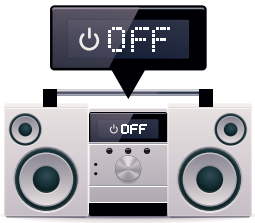
Mixing and old and new batteries together in your device can result in battery-fluid leakage and potential injury. When using rechargeable batteries, we recommend installing cells that were recharged at the same time.



Ideas for Enjoying Better Performance

Switch Off Your Device After Use

The most common cause of battery leakage is over-discharge, which can sometimes occur if your device is left on after use. Make a habit of switching off children's toys after use.



Carry a Spare Set of Batteries

It makes sense to carry a spare set of batteries in case those in your device run out. Panasonic primary and rechargeable batteries offer extended shelf life with enhanced low-self-discharge capability, so we recommend buying more than you think you'll need immediately and keep some spares handy—in your camera bag, for example.

Take Your Batteries Out

If depleted batteries are left in your device for long periods, there is a risk they could leak and cause damage. To avoid this situation, take batteries out of devices that won't be used for long periods (for example, torches) and store them in a safe place.

Tips for Safe Storage

Avoid storing batteries in direct sunlight, in high temperatures, and in areas subject to high humidity. Choose a cool, dry, clean place. The optimal storage temperature for most batteries is between 10°C and 25°C (50°F to 77°F).

Using Primary Batteries After Expiration?

The date displayed on primary batteries isn't actually an expiry date. In fact, it indicates the period from which the battery will operate normally, satisfying performance parameters such as endurance. It doesn't mean that the battery can't be used after this date.

Alkaline battery (lifespan after shipment)

EVOLTA	
D	10 years
C	10 years
AA	10 years
AAA	10 years
9V	5 years

Alkaline	
D	10 years
C	10 years
AA	10 years
AAA	10 years
N	5 years
9V	5 years

Manganese battery (lifespan after shipment)

Extra Heavy Duty	
D	3 years
C	3 years
AA	3 years
AAA	3 years
9V	3 years

Heavy Duty	
D	3 years
C	3 years
AA	3 years
9V	3 years

General Purpose	
D	3 years
C	3 years
AA	3 years
9V	1.5 years

Lithium battery, micro battery (lifespan after shipment)

Micro alkaline button battery	2 years
Zinc-air battery	3 years
Silver oxide battery	2 years
Coin-type lithium battery	5 years
Lithium battery for camera use	10 years

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