

06. Oct, 2011

SANYO New eneloop Batteries Remains Capacity Longer

*Fully-recharged new eneloop keeps approx. 70% of power after 5 years of storage^{*1}*



Tokyo, October 6, 2011 - SANYO Electric Co., Ltd. (SANYO), a world leader in rechargeable battery technology, is pleased to announce its new eneloop batteries, AA- and AAA-size nickel-metal hydride batteries which maintain their capacity even after 5 years of storage after recharging. The new eneloop batteries are also rechargeable approximately 1,800 times^{*2}, an increase of approximately 20% compared to previous eneloop batteries^{*3} which are rechargeable approximately 1,500 times. The products will be available on November 14, 2011 in Japan only^{*4}.

Since their first release in November 2005, "eneloop" batteries have received high market appraisal for their user-friendliness, such as being "usable immediately after purchase" as well as being "rechargeable for repeated use" and "ready to use with even after 3 years of storage (as for HR-3UTGA)".

Given the recently growing interest in products which are useful not only in daily life but for emergencies after the Great East Japan Earthquake on March 11, 2011, SANYO has been further working to meet the interest and developed the new eneloop batteries with lower self discharge and an increased number of charge-discharge cycles. Coinciding with this launch, eneloop charger sets with new eneloop batteries are also going to be available in Japan

SANYO, a member of the Panasonic Group, will continue to expand the "eneloop" series throughout the world so that people can comfortably adopt a new "lifestyle that values reusing and recycling".

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|----------------|--|------------------------------|------------------------------|--------------------------------|
| Product | eneloop AA-size Nickel-metal Hydride Rechargeable Batteries | | | |
| Product Number | HR-3UTGB-2 2 Battery Pack | HR-3UTGB-4 4 Battery Pack | HR-3UTGB-8 8 Battery Pack | HR-3UTGB-12 12 Battery Pack |
| MSRP | JPY 1,260 – (Excluding tax; JPY1,200-) | Open ^{*5} | Open ^{*5} | Open ^{*5} |
| Release Date | November 14, 2011 | | | |

| | | | |
|----------------|---|------------------------------|------------------------------|
| Product | eneloop AAA-size Nickel Metal Hydride Rechargeable Batteries | | |
| Product Number | HR-4UTGB-2 2 Battery Pack | HR-4UTGB-4 4 Battery Pack | HR-4UTGB-8 8 Battery Pack |
| MSRP | JPY 1,050 – (Excluding tax; JPY1,000-) | Open ^{*5} | Open ^{*5} |
| Release Date | November 14, 2011 | | |

Main Features

1. Ready to use with approximately 90% of power remaining even after 1 year of storage and approximately 70% of power remaining even after 5 years of storage
2. Rechargeable approximately 1,800 times, an increase of approximately 20% compared to previous models
3. Pre-charged in factory by clean solar energy^{*6}

<Related Web Sites>



eneloop global site

1. Ready to use with approximately 90% of power remaining even after 1 year of storage and approximately 70% of power remaining even after 5 years of storage

One of the biggest features of eneloop batteries is the low self discharge technology. Thanks to an improvement in the crystal lattice structure of hydrogen storing alloy used in the negative electrode, SANYO developed the new eneloop batteries with lower self discharge. The new "eneloop" batteries maintain approximately 90% of their capacity after 1 year of storage. Furthermore, even after 5 year of storage, the new eneloop batteries are ready to use with approximately 70% of their capacity. This means that the new eneloop batteries are more suitable not only for daily life but for emergencies, reducing the need for customers to stockpile a large number of dry cell batteries.

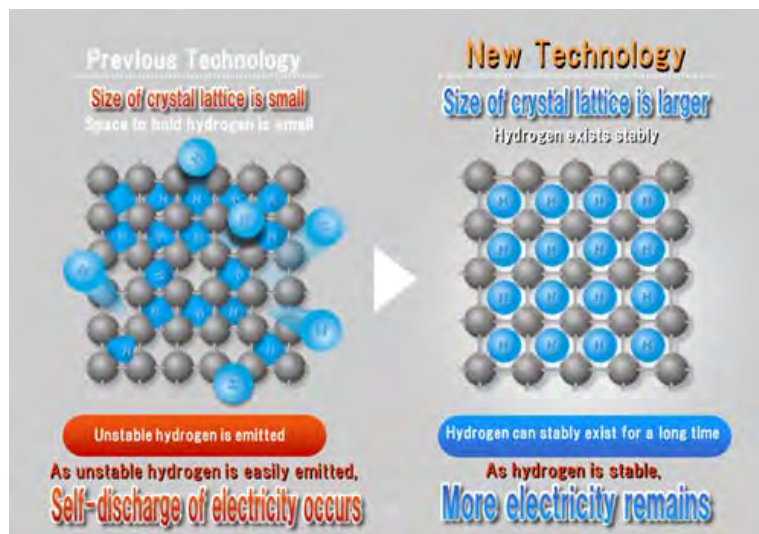
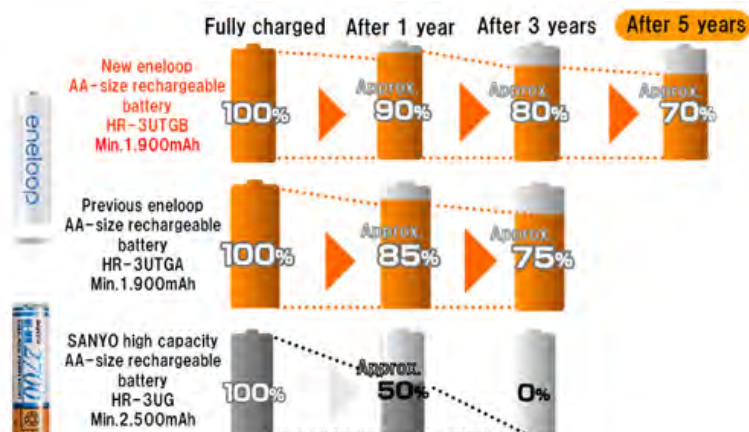


Image of crystal lattice structure of hydrogen storing alloy



Comparison of remaining capacity of SANYO rechargeable batteries after being fully charged

In addition, in case of electric power failure, “eneloop” batteries can be recharged with solar energy generated by the SANYO eneloop solar charger.



SANYO eneloop solar charger (N-SC1AS)

2. Rechargeable approximately 1,800 times, an increase of approximately 20% compared to previous models

Thanks to an improvement in the electrode materials, the new eneloop batteries are rechargeable approximately 1,800 times, an increase of approximately 20% compared to previous eneloop batteries and by approximately 80% compared to the first eneloop battery released in 2005. This means that the new eneloop batteries achieve further eco-friendliness, contributing to reduction of the waste of used batteries. Furthermore, as economical feature, the cost per use for the new eneloop batteries is approximately 2.2 yen^{*7}, reduced from approximately 2.5 yen^{*7} of previous eneloop batteries.



3. Pre-charged in factory by clean solar energy

Along with conventional eneloop batteries, in accordance with the Green Power Certification System, the new “eneloop” batteries are charged by “green power” from photovoltaic generation. This means that a part of the electric power used for manufacturing “eneloop” (the amount equivalent to that used for factory pre-charging) is generated using clean, renewable solar energy, part of SANYO’s initiative to realize a “Clean Energy Loop,” where power is generated from renewable energy sources, stored for use when needed in batteries, and conserved or used efficiently for power-driven applications. Hence, the new “eneloop” truly embodies the concepts of “energy” and “looping,” from production to performance. Furthermore, the SANYO eneloop solar charger contributes to the realization of a clean lifestyle that recharges the eneloop batteries with solar energy and uses it for various gadgets.



All eneloop battery series are pre-charged by clean solar energy

Other features





- Outer covering label used to prevent damage from repeated mounting/dismounting. “Antibacterial finishing^{*8}” ideal for business places, schools, and hospitals where one battery is handled by multiple people.
- Battery package made from only recycled PET which does not need to be separately wasted.
- Stable discharge voltage suitable for gadgets with high power consumption and for low temperature circumstance to operate gadgets longer than dry cell batteries
- Can be recharged anytime thanks to low memory effect
- Also rechargeable by current eneloop battery chargers

“eneloop plus” to be rechargeable approximately 1800 times and ready to use even after 5 years of storage!

The "eneloop plus" batteries to be launched on December 1, 2011 in Japan will also be rechargeable approximately 1,800 times and ready to use with approximately 90% of power remaining after 1 year of storage, and with approximately 70% of power remaining even after 5 years of storage like the new eneloop batteries. The eneloop plus battery houses a PTC thermistor*⁹ which suppresses overheating in case of improper use and is safer to use for toys for small children. The eneloop plus was announced in June, 2011.

Lineup of eneloop rechargeable batteries

SANYO provides wide range of eneloop battery series to meet various needs, from gadgets with high power consumption such as strobe lights and digital cameras to gadgets with low or middle power consumption such as game consoles, flashlights, remote controls and clocks.

| |  eneloop pro |  eneloop plus |  eneloop |  eneloop lite |
|--------------------------------|--|--|---|---|
| Capacity (Min.) ^{*10} | AA-size: Min.2400mAh | AA-size: Min.1900mAh | D-size:Min.5700mAh C-size:Min.3000mAh AA-size:Min.1900mAh AAA-size:Min.750mAh | AA-size:Min.950mAh AAA-size:Min.550mAh |
| Remaining Capacity | Approx. 75% after 1 year | Approx. 90% after 1 year Approx. 80% after 3 years Approx. 70% after 5 years | Approx. 90% after 1 year ^{*11} Approx. 80% after 3 years ^{*11} Approx. 70% after 5 years ^{*11} | Approx. 85% after 1 year Approx. 75% after 3 years |
| Number of recharge | Approx. 500 time | Approx. 1800 times | Approx. 1800 times ^{*11} | Approx. 2000 times |
| Features | Higher capacity than eneloop by approx. 25% Realized both high capacity and low self discharge | Plus Overheat prevention function. Same to capacity, low self discharge characteristic and the number of recharges as eneloop | Lower self discharge than previous model. More rechargeable by approx. 1800 times. | More reasonable and lower capacity than eneloop, keeping user-friendliness of eneloop |
| Applications | Digital cameras, strobe lights etc. Good for users who wants to use gadgets in longer time at one charge. | Toys, radio controls etc. Good for families with young children. | Digital cameras, strobe lights, clocks, remote controls etc. Good for emergency use. | Remote controls, clocks etc. As an entry model of rechargeable batteries |

Outline and Background

'eneloop' nickel-metal hydride rechargeable batteries have received high market appraisal for their cost-effectiveness and environmentally friendly features. The batteries come pre-charged like a dry cell, and are economical and environmental as they are able to be recharged for repeated use as well as recyclable at the end of its lifecycle. According to a company survey, the satisfaction level of "eneloop" users is over 90%^{*11}, and numerous companies now bundle "eneloop" batteries with their products. Also, with the level of recognition of "eneloop" at over 80%^{*11}, "eneloop" is becoming synonymous with rechargeable batteries. In total, over 180 million 'eneloop' batteries have been shipped to more than 60 countries worldwide (as of the end of September, 2011).



For seventh year anniversary of the eneloop, improving the concept of the eneloop that ready to use even after 3 years of storage, SANYO will launch the new eneloop, AA- and AAA-size nickel-metal hydride rechargeable batteries, which is further rechargeable, economical and environmental in November 14, 2011 in Japan.




Specifications

| | eneloop Nickel-metal Hydride Rechargeable Batteries | |
|--|---|----------|
| | AA size | AAA size |
| | | |

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|-------------------------------|------------------------------------|-----------------------------------|
| Product Number | HR-3UTGB | HR-4UTGB |
| Nominal Voltage | 1.2V | |
| Capacity(Min.) ^{*10} | 1,900mAh | 750mAh |
| Dimensions | 14.35mm(Diameter) x 50.4mm(Height) | 10.5mm(Diameter) x 44.5mm(Height) |
| Battery Weight | Approx. 27g | Approx. 13g |

New lineup of eneloop battery chargers

| | | | | | |
|----------|--|--|---|---|---|
| | <p>Double/Triple Speed Quick Charger</p>  | <p>Compact Quick Charger</p>  | <p>Quick Charger with Remaining Capacity Check Function</p>  | <p>Charger with Sliding Cover</p>  | <p>Illumination Charger</p>  |
| Features | Triple-speed charging for one battery and double-speed charging for two batteries | Light & compact Handy to carry around | 3-step remaining capacity indicator | Equipped with sliding cover Double-speed charging for one or two batteries | 3-color illumination charging status indicator |
| Lineup | Charger: NC-TGR01 Set w/ 4 AA: N-TGR01BS Set w/ 4 AAA: N-TGR0104BS | Charger: NC-TGR02BS Set w/ 2 AA: N-TGR02BS Set w/ 2 AAA: N-TGR0204BS | Charger: NC-TGR03 Set w/ 4 AA: N-TGR03BS | Charger: NC-TGN01 Set w/ 4 AA: N-TGN01BS Set w/ 2 AA and 2 AAA: N-TGN0104BS Set w/ batteries & spacers: N-TGN016BSET | Set w/ 2 AA: N-TGC01BS |

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|----------|---|---|--|
| | <p>Quick Charger Set with eneloop Battery Checker</p>  | <p>NiMH Rechargeable Batteries with eneloop Battery Checker</p>  | <p>Carrying Case Set with Charging Function for AA- and AAA- size NiMH Batteries</p>  |
| Features | Comes with eneloop, a battery checker for eneloop, and compact quick charger | Comes with eneloop, a battery checker for eneloop | Speedily and wirelessly charge eneloop batteries by simply placing it on a charging pad which is compliant with "Qi" standards. |
| Lineup | Charger: NC-TGR02 eneloop: NC-ELP1 Set w/ 2 AA: N-TGR02BLPS | eneloop: NC-ELP1 Set w/ 2 AA:HR-3UTGB-2L | Set w/ 2 AA: N-WL01BS-W(White) N-WL01BS-K(Black) |

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|--------------------------|-------------------|---------------------------------|--|
| Charger for USB terminal | Solar Charger Set | Charger set with USB Power Port | Handy Power Source with USB Power Port |
|--------------------------|-------------------|---------------------------------|--|

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|----------|---|---|--|---|
| |  |  |  |  |
| Features | Recharge eneloop via USB terminal Double speed charging for one battery | Recharge eneloop by Solar energy Equipped with USB power port | Recharge eneloop Boost mobile gadgets such as cell phones | Boost mobile gadgets such as cell phones |
| Lineup | Set W/ 2 AA: N-MDU01BS | Set W/ 4 AA: N-SC1AS | Set W/ 2 AA: KBC-E1ADS | Set W/ 2 AA: KBC-D1DS |

- *1 SANYO test with a fully charged battery at room temperature 20°C. (0.2It discharge current, 1.0V/cell discharge cutoff voltage)
- *2 General estimate based on the IEC 61951-2(7.4.1.1) testing conditions (The number of times a battery can be recharged changes according to the use conditions and equipment used.)
- *3 HR-3UTGA and HR-4UTGA
- *4 As of the release date (October 6 2011), the products will be available in Japan only.
- *5 No manufacturer's suggested retail price is set for a product with an open price.
- *6 The Green Power Certification System; Green power is evaluated, in terms of environmental added value, and made tradable by a third-party organization with issuance of a "Certificate of Green Power." Companies and local governments that have obtained this certificate can use the natural energy equivalent to the amount of green power specified in the certificate.
- *7 Comparing the cost per use between conventional eneloop (HR-3UTGA) and new eneloop (HR-3UTGB). Electricity cost per charge; 0.2 yen. Using SANYO battery charger NC-TGN01. [Battery price + Battery charger price + Electricity cost / 1800 (new eneloop's recharging times)]
- *8 Type of antibacterial agent: Inorganic antibacterial agent; Processing method: Printing; Processing site: Outer covering; Testing institute: Japan Spinners Inspecting Foundation; SIAA number: JP0122085A0002V; Test method: JIS Z2801
- *9 PTC thermistor stands for Positive Temperature Coefficient. Device rapidly raising the resistance value, when temperature of element rises to a certain value. Used for electric windows of vehicles to prevent shutting the window on fingers.
- *10 Minimum (min.) battery capacity based on the IEC61951-2(7.2.1) testing conditions.
- *11 As for AA- and AAA-size
- *12 Based on SANYO's Internet survey conducted in April 2011, covering 300 eneloop purchasers