Maxlife Rechargeable NiMH Battery
Safety Data Sheet

1. Identification of Substance & Company

Product

Product name	Maxlife Rechargeable NiMH Battery
Product code	NA
HSNO approval	exempt - manufactured article
Approval description	exempt - manufactured article
UN number	NA
Proper Shipping Name	NA
Packaging group	NA
Hazchem code	NA
Uses	Battery

Company Details

Company	**P.K. Global Limited**
Address	136 Motu Road RD1 Kumeu Auckland 0891 New Zealand
Telephone	0064 9 412 5136
Fax	0064 9 412 5135

Emergency Telephone Number: 0800-764 766

2. Hazard Identification

Approval

Manufactured article: Batteries are considered to be manufactured articles and are not, therefore, covered by the HSNO Act.
Under normal circumstances, a battery is sealed and the substance is not expected to be released.
The following classification and hazards are associated with the contents of an open battery.

GHS 7 Classes	Hazard Statements
Skin corrosive category 1C	H314 - Causes severe skin burns and eye damage.
Eye damage category 1	H318 - Causes serious eye damage.
Carcinogen category 2	H351 - Suspected of causing cancer.
Reproductive toxicity category 2	H361 - Suspected of damaging fertility or the unborn child.
STOT* repeated exposure category 2	H373 - May cause damage to organs through prolonged or repeated exposure.
Chronic aquatic category 1	H410 - Very toxic to aquatic life with long lasting effects.

*STOT – Specific target organ toxicity

SYMBOLS

DANGER

Other Classifications

Swallowing an intact battery can be harmful. If intact battery is swallowed, seek medical attention immediately.

If batteries are place in a fire, they may rupture and the contents may intensify the fire.

Precautionary Statements – these apply to the contents of an opened battery.

Prevention	P102 - Keep out of reach of children. P103 - Read label before use. P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P260 - Do not breathe fume/vapours. P264 - Wash hands thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P273 - Avoid release to the environment. P281 - Use personal protective equipment as required.
Response	P101 - If medical advice is needed, have product container or label at hand. P312 - Call a POISON CENTRE or doctor/physician if you feel unwell. P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P363 - Wash contaminated clothing before reuse. P310 - Immediately call a POISON CENTRE or doctor/physician. P304+P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 - Immediately call a POISON CENTRE or doctor/physician. P308+P313 - IF exposed or concerned: Get medical advice/ attention. P309+P311 - IF exposed or if you feel unwell: Call a POISON CENTRE or doctor/physician. P391 - Collect spillage.
Storage	P405 - Store locked up.
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulation.

3. Composition / Information on Ingredients

Component	CAS/ Identification	Concentration
aluminium	7429-90-5	<2%
cobalt	7440-48-4	2.5-6%
lithium hydroxide	1310-65-2	0-4%
manganese	7439-96-5	<3%
nickel alloy	mixture	<13%
nickel	7440-02-0	30-50%
potassium hydroxide	1310-58-3	<7%
sodium hydroxide	1310-73-2	0-4%
zinc	7440-66-6	<3%
water	7732-18-5	balance

This is a commercial product whose exact ratio of components may vary. Trace quantities of impurities are also likely.

4. First Aid

General Information

If medical advice is needed, have product container or label at hand. You should call the National Poisons Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 0800 764 766 (0800 POISON) (24 hr emergency service). IF exposed or concerned: Get medical advice/ attention.

Recommended first aid facilities Ready access to running water is required. Accessible eyewash is required.

Exposure

Swallowed	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Contact a doctor immediately.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
Skin contact	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor/physician.
Inhaled	Generally, inhalation of fumes from the contents of the battery is unlikely to result in adverse health effects. However, it is a possible sensitiser and so if coughing, dizziness or shortness of breath is experienced, remove the patient to fresh air immediately. If patient is unconscious, place in the recovery position (on the side) for transport and contact a doctor.

Advice to Doctor

Treat symptomatically

5. Firefighting Measures

Fire and explosion hazards:	Batteries may present a hazard if exposed to a fire. Batteries can rupture in a fire and release contents as toxic fumes or vapours. Manganese dioxide and zinc are oxidisers and can intensify a fire.
Suitable extinguishing substances:	Carbon dioxide, extinguishing powder or water jet. Fight larger fires with water jet or alcohol resistant foam. Keep intact batteries cool if exposed to a fire to prevent rupture.
Unsuitable extinguishing substances:	Unknown.
Products of combustion:	Batteries may emit toxic fumes and vapours in a fire.
Protective equipment:	Self-contained breathing apparatus. Safety boots, non-flammable overalls, gloves, hat and eye protection.
Hazchem code:	NA

6. Accidental Release Measures

Containment	There is no current legal requirement for containment of this product. It is a manufactured article.
Emergency procedures for release of contents of a battery	In the event that a battery is damaged and the content is released: Wear protective equipment to prevent skin, eye and respiratory exposure. (see section 8 for details). Contain leakage using sand, earth or vermiculite. Collect and seal in properly labelled containers for disposal.
Emergency procedures (intact batteries)	In the event of spillage of a large number of batteries (>100kg) alert the fire brigade to location and give brief description of hazard. Stop the source of the leak, if safe to do so. Prevent by whatever means possible any batteries from entering drains, sewers, or water courses. (If this occurs contact your regional council immediately).
Disposal	Collect recoverable material into labelled containers for recycling or salvage. Recycle containers wherever possible. This material may be suitable for approved landfill. Dispose of only in accord with all regulations.
Precautions	For content of open batteries: Wear protective equipment to prevent skin and eye contamination and the inhalation of vapours. Work up wind or increase ventilation. For batteries: Ensure that no damage occurs to the batteries to prevent leakage of the content.

7. Storage & Handling

Storage	Store batteries in a cool, dry, well ventilation area. Keep away from heat, fire, sunlight and ignition sources. Store batteries in their packaging. Unpacked batteries may short circuit and generate heat. **Keep away from children.**
Handling	Handle batteries with care. Do not solder or weld onto the battery. Do not mix with used, or other battery types. If handling the contents of an open battery: Keep exposure to a minimum, and minimise the quantities kept in work areas. See section 8 with regard to personal protective equipment requirements. Avoid skin and eye contact and inhalation of vapours/dusts.

8. Exposure Controls / Personal Protective Equipment

Workplace Exposure Standards

During normal use of a battery release of the contents of the battery does not occur.

A workplace exposure standard (WES) has not been established by WorkSafe NZ for this product. There is a general limit of 3mg/m^3 for respirable particulates and 10mg/m^3 for inhalable particulates when limits have not otherwise been established.

NZ Workplace Exposure Stds	Ingredient	WES-TWA	WES-STEL
	Manganese	0.02mg/m^3 (respirable)	-
	Cobalt asCo	0.02mg/m^3 (carc, bio)	-
	Nickel: Ni metal (sen):	0.005mg/m^3 (respirable, carc, sen)	-
	potassium hydroxide	2mg/m^3 (ceiling)	
	sodium hydroxide	2mg/m^3 (ceiling)	

Engineering Controls

In industrial situations, it is expected that employee exposure to hazardous substances will be controlled to a level as far below the WES as practicable by applying the hierarchy of control required by the Health and Safety at Work Act (2015) and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016. Exposure can be reduced by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. If you believe air borne concentrations of mists, dusts or vapours are high, you are advised to modify processes or increase ventilation.

Personal Protective Equipment

General
Personal Protective Equipment (PPE) should not be used as the primary means of exposure protection, except in the event of an accident or emergency situation or where all other means of protection have proven to inadequate. Clean PPE after use or dispose of as appropriate. Store PPE for re-use in a clean place. Regular training on the correct use of PPE should be provided. In particular the correct fitting and use of respirators and where applicable the cleaning of respirators should be undertaken.

Eyes

If handling the contents of an open battery, Protect eyes with goggles, safety glasses or full face mask. Avoid wearing contact lenses.

Skin
If handling the contents of an open battery, avoid skin contact. Wear overalls, rubber boots and impervious gloves. Nitrile or PVC gloves are recommended. Replace frequently. Gloves should be checked for tears or holes before use. Remove protective clothing and wash exposed areas with soap and water prior to eating, drinking or smoking.

Respiratory
A respirator when airborne concentrations approach the WES (section 8). Use a respirator with a particulate filter. If using a respirator, ensure that the cartridges are correct for the potential air contamination and are in good working order.

WES Additional Information

Not applicable

9. Physical & Chemical Properties

Appearance	metal cylinder shell containing electrolyte solution
Odour	intact battery has no odour
Odour Threshold	no data
pH	>14
Freezing/melting point	>300°C
Boiling Point	no data
Flashpoint	non flammable
Flammability	non flammable
Upper & lower flammable limits	no LEL or UEL
Vapour pressure	no data
Vapour density	no data
Specific gravity/density	no data
Solubility	partly soluble in water
Partition coefficient	no data
Auto-ignition temperature	no data
Decomposition temperature	no data
Viscosity	no data
Particle Characteristics	no data

10. Stability & Reactivity

Stability	Stable at room temperature and pressure. Stable during normal use.
Conditions to be avoided	Keep from extreme heat and open flames. Do not puncture, crush or incinerate. Prevent short circuits.
Incompatible groups	Content of the battery: oxidising agents, flammable substances. Acids.
Substance Specific Incompatibility	none known
Hazardous decomposition products	zinc oxides, manganese oxides, other metal oxides, carbon dioxide, carbon monoxide.
Hazardous reactions	none known

11. Toxicological Information

Summary

During normal use the battery are not considered harmful/toxic.
The following summary is for the contents of the battery.
IF SWALLOWED: Can cause burning and permanent damage to the mouth and throat.
IF IN EYES: cause permanent eye damage.
IF ON SKIN: causes burns to the skin. Some individuals may experience allergic skin reactions.
IF INHALED: if vapours are inhaled, these can cause respiratory irritation. Some sensitised individuals may experience asthma type symptoms (cobalt, nickel).
CHRONIC TOXICITY: prolonged or repeated contact with the contents of the battery may cause long term toxicity due to exposure to cobalt may affect the lungs and respiratory system.

Supporting Data

Acute	**Oral**	Using LD_{50}'s for ingredients, the calculated LD_{50} (oral) for the mixture is between 2000 and 5,000 mg/kg. Data considered includes: lithium hydroxide : 120mg/kg (rat), potassium hydroxide: 273mg/kg (rat).
	Dermal	No evidence of dermal toxicity.
	Inhaled	Using LC_{50}'s for ingredients, the calculated LC_{50} (inhalation, rat) for the mixture is >20 mg/L (dust/mist) ppm. Data considered includes:Lithium hydroxide 0.96mg/L (rat, dust/mist): Acute exposure to zinc dust fumes can cause metal fume fever in humans.
	Eye	The mixture is considered to be corrosive to the eye, the pH of the contents is >14.
	Skin	The mixture is considered to be corrosive to the skin, the pH of the contents is >14.
Chronic	**Sensitisation**	Several of the metal and metal compounds present are considered respiratory and skin sensitisers, e.g. cobalt and nickel.
	Mutagenicity	No ingredient present at concentrations > 0.1% is considered a mutagen.
	Carcinogenicity	Cobalt is classed carcinogen cat 2 by EPA and is present >0.1%. Nickel alloy is also considered a carcinogen carcinogen cat 2.
	Reproductive / Developmental	The mixture is considered to be a reproductive or developmental toxicant, because Cobalt is a suspected reproductive effector.
	Systemic	The mixture is considered to be a suspected target organ toxicant (6.9B), because cobalt is a known systemic toxicant (but present in <10%).
	Aggravation of existing conditions	None known.

12. Ecological Data

Summary

An intact battery is not considered harmful to the environment. However is exposed to the elements the housing may break down and release the contents of the battery. The contents is considered ecotoxic in the aquatic environment. Do not allow contents to reach waterways.

Supporting Data – for the contents of the battery

Aquatic	Using EC_{50}'s for the contents of the battery: the calculated EC_{50} for the mixture is < 1 mg/L. Data considered includes: Zinc 0.14 mg/l (96h, Oncorhynchus mykiss), 0.07 mg/l (48hr, Daphnia magna), 0.03 mg/l (96hr, Selenastrum capricornutum). The pH of the mixture is >14.
Bioaccumulation	No data.
Degradability	No data
Soil	EPA has not classified any of the ingredients as ecotoxic in the soil environment.
Terrestrial vertebrate	The contents of the battery may be toxic towards terrestrial vertebrates. See acute toxicity above.
Terrestrial invertebrate	There is no evidence of toxicity towards terrestrial invertebrates.
Biocidal	no data

13. Disposal Considerations

Restrictions	There are no product-specific restrictions, however, local council and resource consent conditions may apply, including requirements of trade waste consents.
Disposal method	Disposal of this product must comply with the Hazardous Substances (Disposal) Notice 2017 and the requirements of the Resource Management Act for which approval should be sought from the Regional Authority. The substance must be treated and therefore rendered non-hazardous before discharge to the environment.
Contaminated packaging	Disposal of contaminated packaging must comply with the Hazardous Substances (Disposal) Notice 2017 clause 12. Ensure that the package is rendered incapable of containing any substance and is disposed in a manner that is consistent with the requirements of the substance it contained and the material of the package. If possible reuse or recycle packaging.

14. Transport Information

LAND TRANSPORT:

Not regulated for transport on land.

UN number:	NA	**Proper shipping name:**	NA
Class(es)	NA	**Packing group:**	NA
Precautions:	NA	**Hazchem code:**	NA

AIR TRANSPORT:
IATA: Not restricted to IATA DGR according to special provision A123.

MARINE TRANSPORT:

UN number:	3496	**Proper shipping name:**	BATTERIES, NICKEL-METAL HYDRIDE
Class(es)	9 (Miscellaneous dangerous substances and articles)	**Packing group:**	NA
Additional Information	Special Provision 963	**EMS number**	F-A, S-I

15. Regulatory Information

Batteries are considered to be manufactured articles and are not, therefore, covered by the HSNO Act. Although they may contain hazardous substances, the item has an end use function wholly dependent on its shape and design, which does not involve the intentional release of any hazardous component. (from EPA New Zealand)

Other Legislation

In New Zealand, the use of this product may come under the Resource Management Act and Regulations, the Health and Safety at Work Act 2015 and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, local Council Rules and Regional Council Plans.

16. Other Information

Abbreviations

Approval Code	Approval: exempt - manufactured article Controls, EPA. www.epa.govt.nz
CAS Number	Unique Chemical Abstracts Service Registry Number
EC_{50}	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species)
EPA	Environmental Protection Authority (New Zealand)
GHS	Globally Harmonised System of Classification and Labelling of Chemicals, 7th revised edition, 2017, published by the United Nations.
HAZCHEM Code	Emergency action code of numbers and letters that provide information to emergency services, especially fire fighters
HSNO	Hazardous Substances and New Organisms (Act and Regulations)
IARC	International Agency for Research on Cancer
LEL	Lower Explosive Limit
LD_{50}	Lethal Dose 50% – dose which is fatal to 50% of a test population (usually rats).
LC_{50}	Lethal Concentration 50% – concentration in air which is fatal to 50% of a test population (usually rats)
NZIoC	New Zealand Inventory of Chemicals
STEL	Short Term Exposure Limit - The maximum airborne concentration of a chemical or biological agent to which a worker may be exposed in any 15 minute period, provided the TWA is not exceeded
STOT RE	Specific Target Organ Toxicity – Repeated Exposure
STOT SE	Specific Target Organ Toxicity – Single Exposure
TWA	Time Weighted Average – generally referred to WES averaged over typical work day (usually 8 hours)
UEL	Upper Explosive Limit
UN Number	United Nations Number
WES	Workplace Exposure Standard - The airborne concentration of a biological or chemical agent to which a worker may be exposed during work hours (usually 8 hours, 5 days a week). The WES relates to exposure that has been measured by personal monitoring using procedures that gather air samples in the worker's breathing zone.

References

Data	Unless otherwise stated comes from the EPA HSNO chemical classification information database (CCID).
Controls	EPA notices, www.epa.govt.nz, Health and Safety at Work (Hazardous Substances) Regulations 2017, www.legislation.govt.nz
WES	The latest NZ Workplace Exposure Standards, published by WorkSafe NZ and available on their web site – www.worksafe.govt.nz.
Other References:	EU ECHA, ingredients SDS's, ChemIDplus

Review

Date	**Reason for review**
March 2015	Not applicable – new SDS
February 2020	5 yearly update
March 2025	Update, update of WES, HSNO to GHS 7

Disclaimer