

SECTION 1. CHEMICAL PRODUCT AND COMPANY NAME**Nickel Cadmium Rechargeable Battery Pack****Safety Data Sheet**

Complies with the OSHA Hazard
Communication Standard :
29 CFR 1910 1200

Makita U.S.A., Inc.
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EMERGENCY CONTACT INFORMATION

Telephone Number for Information: MAKITA: 1-510-657-9881

Emergency Response

For Chemical Emergency
Spills, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada 1-800-424-9300

SECTION 2. HAZARD IDENTIFICATION**Human Health Effects:**

Inhalation:	The electrolyte inhalation affects the respiratory tract membrane and the lungs. Cadmium fume may cause a cough, chest pain and dyspnea. Bronchitis and pneumonia may occur. This could be a carcinogen.
Skin Contact:	Electrolyte contact with the skin may have serious effects and may cause dermatitis.
Eye Contact:	The electrolyte leaked from a battery cell is a strong alkali. If it comes into contact with the eye the cornea may be affected and it may lead to blindness.
Ingestion:	The ingestion of electrolyte will irritate the mouth and the throat seriously resulting in vomiting, nausea, hematemesis, stomach pains and diarrhea.
Environmental Effects:	The battery may be harmful to the environment and should be disposed of according to Local, State & Federal Regulations.

SECTION 3. COMPOSITION, INFORMATION OR INGREDIENTS

The product is a manufactured article as described in 29 CFR 1910.1200. The battery cell, chemical materials are stored in a hermetically-sealed metal case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials leakage.	Substance or preparation: Preparation information about the chemical nature of product			
	Common Chemical Name General Name	CAS Number	Concentration / Concentration Range	Classification and Hazard Labeling
	Nickel, Nickel Compounds	7440-02-0	15-40%	Specific Hazard
	Cadmium, Cadmium Compounds	7440-43-9	10-40%	Specific Hazard
	Cobalt Compounds	7440-48-4	0-3%	Specific Hazard
	Carbon Black	1333-86-4	0-1%	Specific Hazard
	Iron	7439-89-6	20-65%	-

CONTINUED: SECTION 3. COMPOSITION, INFORMATION OR INGREDIENTS

However, if exposed to a fire, explosion, added mechanical shocks, decomposed, added electric stress by misuse, the gas release vent will be operated. The battery cell case will be breached at the extreme. Hazardous materials may be released. Moreover, if heated intensely by the surrounding fire, acid or harmful fume may be emitted.	Potassium Hydroxide	1310-58-3	0-5%	Acute Toxicity Corrosivity Irritant Property
	Sodium Hydroxide	1310-73-2		
	Lithium Hydroxide	1310-65-2		

SECTION 4. FIRST AID MEASURE**Internal Cell Materials Of An Opened Battery Cell:**

Inhalation:	Cover the victim in a blanket, move to the place of fresh air and keep quiet. Seek medical attention immediately. When dyspnea (breathing difficulty) or asphyxia (short of oxygen), give artificial respiration immediately.
Skin Contact:	Remove contaminated clothes and shoes immediately. Wash the contacted region with soap and plenty of water. Seek medical attention immediately.
Eye Contact:	Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention immediately.
Ingestion:	If a battery cell and internal cell materials of an opened battery cell are ingested, do not induce vomiting. Seek medical attention immediately

SECTION 5. FIRE FIGHTING MEASURES

Although a battery cell is not flammable, in case of fire move it away from the fire as quickly as possible. The following measures should be taken when it cannot be moved.

Suitable Extinguishing Media: Dry sand, chemical powder fire extinguishing medium.

Specific Hazards: Acid or harmful fume is emitted during fire.

Special Protective Equipment For Firefighters: Protective equipment written in "Exposure Controls/ Personal Protection" Section 8.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Internal cell materials, such as electrolyte leaked from battery cell, are carefully dealt with according to the followings:

Personal Precautions: Forbid unauthorized person to enter. Remove materials if contaminated with electrolyte with protective equipment written in "Exposure Controls/ Personal Protection" Section 8.

Environmental Precautions: Do not throw out into the environment

Method Of Recovery And Neutralization: Dilute the leaked electrolyte with water and neutralize with diluted sulfuric acid. The leaked solid is moved to a container. The leaked place is fully flushed with water.

SECTION 7. HANDLING AND STORAGE

Handling - Technical Measures:

Prevention Of User Exposure: Not necessary under normal use

Prevention Of Fire And Explosion: Not necessary under normal use

Precaution For Safe Handling: Do not damage or remove the external tube

Specific Safe Handling Advice: Never expose cells in a fire or to high temperatures. Do not soak cells in water and seawater. Do not expose to strong oxidizers. Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform. Do not connect the positive terminal to the negative with electrically conductive material. In case of charging, use only dedicated charger or charge according to the conditions specified by Makita.

Storage -Technical Measures:

Storage Conditions (suitable to be avoided): Avoid direct sunlight, high temperature, high humidity. Store in cool place (temperature : -30 ~ 35 degree C, humidity : 45 ~ 85%).

Incompatible Products: Conductive materials, water, seawater, strong oxidizers and strong acids.

Packing Material (recommended, not suitable): Insulative and tear-proof materials are recommended.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Measures: No engineering measure is necessary during normal use. In case of internal cell materials' leakage, the information below will be useful

Control Parameters:

Common Chemical Name/ General Name	ACGHI	
	TLV-TWA	BEI
Nickel, Nickel Compounds	(As Ni) Metal: 1.5mg/m ³ Soluble compounds: 0.1mg/m ³ Insoluble compounds: 0.2mg/m ³	-
Cadmium, Cadmium Compounds	(As Cd) Simple substance: 0.01 mg/m ³ Compounds: 0.002mg/m ³	In urine: 5 micro g/l In blood: 5 micro g/l
Cobalt Compounds	(As Co) 0.02mg/m ³	In urine: 15 micro g/l In blood: 1 micro g/l
Carbon Black	3.5mg/m ³	-
Potassium Hydroxide	-	-
Sodium Hydroxide	-	-
Lithium Hydroxide	-	-
Nickel, Nickel Compounds	(As Ni) Metal: 1.5mg/m ³ Soluble compounds: 0.1mg/m ³ Insoluble compounds: 0.2mg/m ³	-

ACGIH: American Conference of Governmental Industrial Hygienists, Inc.

TLV-TWA: Threshold Limit Value-time weighted average concentration

BEI: Biological Exposure Indices

CONTINUED: SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Personal Protection:

Respiratory Protection: Protective mask

Eye Protection: Protective glasses designed to protect against liquid splashes

Hand Protection: Protective gloves

Skin and Body Protection: Working clothes with long sleeve and long trousers

The Toxic Substances Control Act (TSCA), does not apply to the battery, because it is not a chemical substance but an article.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Physical State: Solid

Form: Cylindrical

Color: Metallic color (without tube)

Odor: No odor

PH: N/A

Specific Temperatures/Temperature Ranges At Which Changes In Physical State Occur:

There is no useful information for the product as a mixture.

Flash Point: N/A

Explosion Properties: N/A

Density: About 2.4 ~ 4.0 g/cm³

Solubility, With Indication Of The Solvent (s): Insoluble in water

SECTION 10. STABILITY AND REACTIVITY

Stability: Stable under normal use

Hazardous Reactions Occurring Under Specific Conditions: By misuse of a battery cell or the like, oxygen or hydrogen accumulates in the cell and the internal pressure rises. These gases may be emitted through the gas release vent. When fire is near, these gases may catch fire.

Conditions to Avoid: Direct sunlight, high temperature and high humidity

Materials to Avoid: Conductive materials, water, seawater, strong oxidizers and strong acids

Hazardous Decomposition Products: Acid or harmful fume is emitted during fire.

SECTION 11. TOXICOLOGICAL INFORMATION

There is no data available on the product itself. The information of the internal cell materials is as follows:

Nickel, Nickel Compounds:

Acute Toxicity:

oral	GHS - out of category
skin	Unknown
inhalation (gas)	GHS: exempt from a classification
inhalation (steam)	Unknown
inhalation (mist)	Unknown

Skin Corrosivity:

Unknown

Serious Damage and Irritant Property For Eyes:

Unknown

Respiratory or Skin Sensitization:

Respiratory Sensitization:

GHS - Category 1

The allergy, asthma or breathing difficulties might be caused when inhaling

Skin Sensitization:

GHS - Category 1

The allergic skin reaction might be caused

Germline Mutagenicity:

GHS - it is not possible to classify it due to data deficiency

Carcinogenicity:

GHS:	Category 2
ACGIH:	(Metal) A-5 - Not suspected as a human carcinogen
ACGIH:	(Water-soluble compounds) A4 - Not classified as a human carcinogen obviously
ACGIH:	(Insoluble compounds) A1 - Confirmed human carcinogen
NIOSH:	Potential occupational carcinogen
NTP:	Reasonably anticipated to be human carcinogen
IARC:	(Metal) Group 2B possible carcinogenic to human
IARC:	(Compounds) Group 1 carcinogenic to human

Reproduction Toxicity:

GHS: It is not possible to classify it due to data deficiency

Certain Target Organ/Systemic Toxicity (single exposure):

GHS: Category 1 (respiratory organ and kidney)

The disorder of the respiratory organ and the kidney is caused

Certain Target Organ/Systemic Toxicity (repeated exposure):

GHS: Category 1 (respiratory organ)

The disorder of the respiratory organ is caused by long-term or repeated exposure

Cadmium, Cadmium Compounds:

Acute Toxicity:

oral	GHS - Category 4 (Swallowing is harmful)
skin	Unknown
inhalation (dust)	GHS: Category 1 (It is dangerous in the life when inhaling)

Skin Corrosivity:

Unknown

Serious Damage and Irritant Property For Eyes:

Unknown

Respiratory or Skin Sensation:

Unknown

Germline Mutagenicity:

GHS: Category 2

The hereditary disorder might be caused

CONTINUED: SECTION 11. TOXICOLOGICAL INFORMATION

Carcinogenicity:

GHS: Category 1A
ACGIH: A-2 - Suspected human carcinogen
NIOSH: Potential occupational carcinogen
NTP: Known to be a human carcinogen
IARC: Group 1 carcinogenic to human

Reproduction Toxicity:

GHS: Category 2
Harmful effects on reproductive capacity or fetus might be exerted

Certain Target Organ/Systemic Toxicity (single exposure):

GHS: Category 1
Damage of lungs and the respiratory organ is caused
Overexposure causes the pulmonary disorder

Certain Target Organ/Systemic Toxicity (repeated exposure):

GHS: Category 1 (respiratory organ)
The disorder of the respiratory organ is caused by long-term or repeated exposure

Cobalt, Cobalt Compounds:

Acute Toxicity:

oral GHS - out of category
skin Unknown
inhalation (gas) GHS: exempt from a classification
inhalation (steam) Unknown
inhalation (mist) GHS - It is not possible to classify it due to data deficiency

Skin Corrosivity:

Unknown

Serious Damage and Irritant Property For Eyes:

Unknown

Respiratory or Skin Sensation:

Respiratory Sensitization:

GHS - Category 1
The allergy, asthma or breathing difficulties might be caused when inhaling

Skin Sensitization:

GHS - Category 1
The allergic skin reaction might be caused

Germline Mutagenicity:

Unknown

Carcinogenicity:

GHS: Category 2
ACGIH: A3 - Confirmed animal carcinogen but relevance to human carcinogen is unknown
IARC: Group 2B Possible carcinogenic to human
May cause cancer

Reproduction Toxicity:

GHS: Category 2
The adverse effect on reproductive competence or the fetus might occur

Certain Target Organ/Systemic Toxicity (single exposure):

GHS: Category 3 (respiratory tract irritating properties))
The respiratory organ might be stimulated

Certain Target Organ/Systemic Toxicity (repeated exposure):

GHS: Category 1 (respiratory organ)
The disorder of the respiratory organ is caused by long-term or repeated exposure

CONTINUED: SECTION 11. TOXICOLOGICAL INFORMATION

Carbon Black:

Acute Toxicity:

oral	rat LD50 15400 mg/kg
skin	Unknown
inhalation (dust)	Unknown

Skin Corrosivity:

Unknown

Serious Damage and Irritant Property For Eyes:

Unknown

Respiratory or Skin Sensitization:

Respiratory Sensitization:

Unknown

Skin Sensitization:

Unknown

Germline Mutagenicity:

Unknown

Carcinogenicity:

GHS:	Category 2
ACGIH:	A3 - Confirmed animal carcinogen but relevance to human carcinogen is unknown
IARC:	Group 2B Possible carcinogenic to human

May cause cancer

Reproduction Toxicity:

Unknown

Certain Target Organ/Systemic Toxicity (single exposure):

Unknown

Certain Target Organ/Systemic Toxicity (repeated exposure):

GHS: Category 1 (respiratory organ)
The disorder of the pulmonary is caused by long-term or repeated inhalation exposure

Potassium Hydroxide:

Acute Toxicity:

oral	GHS - Category 3 - harmful if swallowed
skin	GHS - It is not possible to classify
inhalation (steam)	GHS - It is not possible to classify
inhalation (dust)	GHS - It is not possible to classify

Skin Corrosivity:

GHS - Category 1B
Serious chemical wound of skin and damage of eyes is caused

Serious Damage and Irritant Property For Eyes:

GHS - Category 1

Respiratory or Skin Sensation:

Respiratory Sensitization:

GHS - It is not possible to classify

Skin Sensitization:

GHS - Out of category

Germline Mutagenicity:

GHS - Out of category

Carcinogenicity:

GHS - It is not possible to classify

Reproduction Toxicity:

GHS - It is not possible to classify

Certain Target Organ/Systemic Toxicity (single exposure):

GHS: Category 1 (respiratory system)
The disorder of the respiratory organ is caused

CONTINUED: SECTION 11. TOXICOLOGICAL INFORMATION

Certain Target Organ/Systemic Toxicity (repeated exposure):

GHS: It is not possible to classify

Sodium Hydroxide:

Acute Toxicity:

oral	GHS - It is not possible to classify
skin	GHS - It is not possible to classify
inhalation (gas)	GHS - Out of category
inhalation (steam)	Unknown
inhalation (dust)	Unknown

Skin Corrosivity:

GHS - Category 1
Serious chemical wound of skin and damage of eyes is caused

Serious Damage and Irritant Property For Eyes:

GHS - Category 1
Serious damage of eyes is caused

Respiratory or Skin Sensation:

Respiratory Sensitization:

GHS - It is not possible to classify

Skin Sensitization:

GHS - Out of category

Germline Mutagenicity:

GHS - Out of category

Carcinogenicity:

GHS - It is not possible to classify

Reproduction Toxicity:

GHS - It is not possible to classify

Certain Target Organ/Systemic Toxicity (single exposure):

GHS: Category 1 (respiratory system)
The disorder of the respiratory organ is caused

Certain Target Organ/Systemic Toxicity (repeated exposure):

GHS: It is not possible to classify

Lithium Hydroxide:

Acute Toxicity:

oral	GHS - Category 3 - harmful if swallowed
skin	GHS - Unknown
inhalation (steam)	GHS - Unknown
inhalation (dust)	GHS - Category 3 - harmful if inhaled

Skin Corrosivity:

GHS - Category 1
Serious chemical wound of skin and damage of eyes is caused

Serious Damage and Irritant Property For Eyes:

GHS - Category 1

Respiratory or Skin Sensation:

Respiratory Sensitization:

GHS - It is not possible to classify

Skin Sensitization:

GHS - It is not possible to classify

Germline Mutagenicity:

Unknown

Carcinogenicity:

Unknown

Reproduction Toxicity:

Unknown

CONTINUED: SECTION 11. TOXICOLOGICAL INFORMATION

Certain Target Organ/Systemic Toxicity (single exposure):

GHS: Category 1

The disorder of the respiratory system is caused by inhalation exposure

Certain Target Organ/Systemic Toxicity (repeated exposure):

GHS: Category 1 & 2

The disorder of the respiratory system is caused by long-term or repeated inhalation exposure.

The disorder of the liver and the hematopoietic system by long-term or repeated oral exposure might be caused.

SECTION 12. ECOLOGICAL INFORMATION

Persistence / Degradability:

Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment

Bioaccumulation:

Cadmium bioaccumulation occurs in plants and marine food in the human food chain

SECTION 13. DISPOSAL CONSIDERATIONS

Recommended Methods For Safe and Environmentally Preferred Disposal:

Product (waste from residues)

Do not throw out a used battery cell. Recycle it through the recycling company

Contaminated Packaging:

Neither a container nor packaging is contaminated during normal use. When internal materials leak from a battery cell, packaging can become contaminated, dispose of it as industrial wastes which is subject to special control.

SECTION 14. TRANSPORT INFORMATION

This battery doesn't correspond to dangerous article of the United Nations transportation regulations. Moreover, this article doesn't correspond to dangerous article to which transportation is restricted by the following decree and guideline.

- TECHNICAL INSTRUCTIONS FOR THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR (ICAO)
 - IATA Dangerous Goods Regulations (IATA)
 - INTERNATIONAL MARITIME DANGEROUS GOODS CODE (IMO)
 - Code of Federal Regulations (U.S.DOT)

In the case of transportation, confirm there is no leakage coming from the container. Do not drop, break or damage cargo. Prevent cargo piles from possible collapse by keeping them dry and protected from rain. The container must be handled carefully. Do not hit the container which may damage the battery. When packaging the batteries, ensure they will not be shorted during shipping.

Section - HANDLING AND STORAGE also.

SECTION 15. REGULATORY INFORMATION

Regulations Specifically Applicable To The Product:

- Waste Management and Public Cleaning Law (Japan)
- Law for Promotion Effective Utilization of Resources (Japan)
- Mercury-containing and Rechargeable Battery Management Act (USA)
- Commission Directive 2006/66/EU (EU)

SECTION 16. OTHER INFORMATION

- The information contained in this Safety Data Sheet is based on the present state of knowledge and current legislation
- This Safety Data Sheet provides guidance on health, safety and environmental aspect of the product and should not be constructed as any guarantee of technical performance or suitability for particular applications.

REFERENCE:

Chemical substances information: Japan Advanced Information Center of Safety and Health

International Chemical Safety Cards (ICSCs):

International Occupational Safety and Health Information Center (CIS)

2005 TLVs and BEIs: American Conference of Governmental Industrial Hygienists (ACGIH)

NIOSH CARCINOGEN LIST: National Institute for Occupational Safety and Health (NIOSH)

The Ninth Report on Carcinogen: National Toxicology Program (NTP)

IARC Monographs Program on the Evaluation of Carcinogenic Risks to Humans:

International Agency for Research on Cancer (IARC)

Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

National Institute of Technology and Education (NITE)