Product Information Data Sheet

Nickel Cadmium battery is not a target product for SDS(safety data sheet).
This sheet is intended to be issued in order to provide “reference information” to ensure the safe handling of the product.

1. Chemical Product and Company Identification

Product name : Sealed Nickel Cadmium Battery
Information on company
Company name : THE FURUKAWA BATTERY CO. ,LTD.
Department in charge : Environmental promotion
Address : No.2-4-1 HOSHIKAWA, HODOGAYA-KU, YOKOHAMA, KANAGAWA, JAPAN
Phone number : 81-45-336-5055
Fax number : 81-45-333-2534

2. Hazards Identification

GHS Classification
Hazard class :Not applicable
Health Hazards :Not applicable
Environmental Hazards :Not applicable
GHS label elements
Symbol :None
Signal word :None
Hazard statements :None
Precautionary statements :None
Other risks :No information

3. Composition/Information on Ingredients

Chemical name or common name	Component part	Content rate (mass ratio)	Chemical formula	CAS no.
Nickel and compounds	Plate	10-40	Ni	7440-02-0
Cadmium and compounds	Plate	10-35	Cd	7440-43-9
Cobalt and compounds	Plate	0-3	Co	7440-48-4
Iron	Container	20-50	Fe	7439-89-6
Carbon Black	Label	0-1	C	1333-86-4
Potassium Hydroxide	Electrolyte	0-5	KOH	1310-58-3
Sodium Hydroxide			NaOH	1310-73-2
Hydroxide Lithium			LiOH	1310-65-2

4. First-aid Measures

If inhaled : (Cadmium, Potassium Hydroxide, Sodium Hydroxide, Hydroxide Lithium)
Remove person to fresh air, keep comfortable for breathing.
Get medical advice/attention.
(Nickel, Cobalt)
If difficulty breathing, move to a place with fresh air and rest in a comfortable posture.
Contact doctor if you experience respiratory symptoms.

If on skin : (Nickel, Cobalt)
Wash skin with plenty of water and soap.
If skin irritation occurs, get medical advice/attention.
Take off all contaminated clothing and wash it when reusing.

(Potassium Hydroxide, Sodium Hydroxide, Hydroxide Lithium)
Take off or remove immediately all contaminated clothing.
Rinse skin with water or shower.
If skin irritation or chemical injury occurs, get medical advice/attention.

If in eyes : (Potassium Hydroxide, Sodium Hydroxide, Hydroxide Lithium)
Open the eyelids with your fingers, rinse thoroughly with water for at least 15 minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
Get medical attention/advice.

If swallowed : (Cadmium)
Contact doctor if you feel unwell.
Rinse mouth.
(Sodium Hydroxide, Potassium Hydroxide, Hydroxide Lithium)
Immediately call a doctor.
Rinse mouth. Do not induce vomiting.
Get medical advice/attention.

Most important symptoms/effects, acute and delayed : (Cadmium)
Cough, headache, chest pain, dyspnea, fever, dizzy, bronchitis, pulmonary edema, dermatitis, redness, abdominal pain, diarrhea, nausea, vomiting.
(Potassium Hydroxide, Sodium Hydroxide, Hydroxide Lithium)
Corrosive, burning sensation, sore throat, cough, breathlessness, shortness of breath, redness, pain, blisters, blurred vision, severe skin burns, severe burns, abdominal pain, headache, nausea, shock or collapse, vomiting, weakness.

Protection for first-aiders : Rescuers wear protective equipment such as rubber gloves and tight-fitting safety goggles.

Special note to physician : (Cadmium, Sodium Hydroxide, Hydroxide Lithium)
Symptoms of lung edema often do not show until a few hours have passed, and it might aggravate if it does not take a rest. Therefore, it is necessary to take a rest and medical observation.

5. Fire Fighting Measures

Specific risk/hazard : In case of fire, there is a possibility that irritative, corrosive or toxic fumes or gases are generated.
There is a possibility of explosion of the product by heat.

Specific fire fighting method : Cut off the power in case of connection/energizing the product into the device, if can be coped with safely.
Move the product from the fire area if it is not dangerous.
After extinguishing the fire, continue to cool the container thoroughly with plenty of water.
Immediately move the movable product to safe place when fire occurs in surrounding. If it is not movable, cool the product with water spray.
Keep away the combustible materials to prevent spread fire around.

Protection for fire-fighters : Extinguish fire from upwind.
Wear appropriate protective clothes for chemical (self-contained breathing apparatus, protective glasses, etc.) to fire fighting.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency measures : Wear appropriate protective equipment (gloves, protective glasses, protective clothing and the like), when processing the leakage.
Do not touch or walk through the leakage.
Do not breathe dust, mist and vapour.

Precautions for the environment : Be careful to not discharge the product into the rivers, sewer, and soil.

Method for containment and clean-up : Collect in an empty container that can be sealed.
Collected material should be disposed in compliance with ’13. Disposal Considerations’.

Prevention of secondary hazards : Immediately remove all ignition sources in the vicinity.
Prepare fire extinguishing equipment just in case it is ignited.

7. Handling and Storage

Handling

Technical measures	: Take measure described in '8: Exposure Controls and Personal Protective Equipment', and wear appropriate protective equipment.
Local exhaust/general ventilation	: Work in a well-ventilated place and provide local exhaust or general ventilation as necessary.
Cautions for Safety Handling	: Do not use fire near the product. Do not dismantle or modify the product. Do not do short-circuit between the terminals. Handling and charging of the product should be in well ventilated place. Prevent falling and overturning of container. Careful to not give a shock. Try to not damage the product. Do not eat, drink or smoke when using this product.

Storage

Safe Storage condition	: Provide a ventilation and lighting required for storing and handling hazardous materials in the storage location. : Do not store near the fire. Do not store in place where is exposed to high temperature, high humidity, rain, direct sunlight. Store in place where is no risk of fire, toxic gas, liquid droplets, generating or invasion of dust, and submerged.
Packing material	: Use a sealed container without damage or leakage.

8. Exposure Controls and Personal Protective Equipment

Controlled exposure level	: Cadmium (plate) (as Cadmium) : 0.05 mg/m^3 Cobalt (plate) Cobalt and compounds (as cobalt): 0.02 mg/m^3
ACGIH (2018)	: Nickel (plate) Nickel: TWA 0.2mg/ m^3 Cadmium (plate) (as Cadmium) : TWA=0.002 mg/ m^3 Cobalt (plate) (as Cobalt and compounds): TLV-TWA=0.02 mg/ m^3 Potassium Hydroxide(Electrolyte) TLV-Celling limit=2 mg/m^3 Sodium Hydroxide(Electrolyte) TLV-Celling =2.0mg/m^3 Hydroxide Lithium(Electrolyte) TLV-Celling=0.05 mg/m^3
Engineering controls	: Provide hand wash and eyes wash facilities and safety shower near the handling place as necessary.

Personal protective equipment

Respiratory protection	: Wear respiratory protective equipment as necessary.
Hand protection	: Wear impermeable protective gloves.
Eye protection	: Wear protective glasses, goggle type safety glasses and the like.
Skin and body protection	: Wear protective clothing, protective apron and the like as necessary.
Hygiene measures	: Do not eat, drink or smoke when handling. Wash hands thoroughly after handling. Protective equipment shall be inspected regularly according to the protective equipment checklist.

9. Physical and Chemical properties

Describes the information about the components below.

	Nickel	Cadmium	Cobalt	Potassium Hydroxide	Sodium Hydroxide	Hydroxide Lithium
Physical state	Solid	Solid	Solid	Liquid	Liquid	Liquid
Colour,	No information	Silver white	Silver white	Colourless	Colourless	Colourless
Odour	No information	No information	Odorless	Odorless	Odourless (normal temperature)	Odorless
Melting point	1453℃	321℃	1,493℃	Approx.8℃	No information	No information
Boiling point, initial boiling point and boiling range	2730℃	765℃	2,870℃	138℃	140℃	No information
Flammability (solid, gas)	No information	No information	No information	Non flammable	Non flammable	No information
Lower and upper explosion limit / flammability limit	No information	No information	Not applicable	No information	No information	No information
Flash point	No information	Not applicable	Not applicable	Non flammable	No information	No information
Auto-ignition temperature	No information	No information	Not applicable	Non flammable	No information	No information
Decomposition temperature	No information	No information	No information	No information	No information	No information
pH	No information	No information	No information	14(1mol/L, 25℃)	13.5≦	12≦
Kinematic viscosity	No information	No information	Not applicable	No information	:No information	No information
Solubility	4.22E+005 mg/L:SRC	Water: Insoluble	Water: 0.00029 g /100 cc	Miscible in water.	Miscible in water. Soluble in alcohol.	Miscible in Water and alcohol.
Partition coefficient ;n-octanol/water(log value)	-0.57 (EST) : SRC	log Pow = -0.07 (Estimated value)	Not applicable	No information	No information	No information
Vapour pressure	1mmHg (1,810℃)	5.52×10-7Pa (25℃,Estimated value)	1Pa(1,517℃)	0.43hPa (20℃)	0.41 kPa (20℃)	No information
Density and/or relative density	8.908g/cm3:Merck	No information	8.9 g/cm³	No information	1.4791 (20/4℃)	No information
Relative vapour density	No information	No information	Not applicable	No information	No information	No information
Particle characteristics	No information	No information	No information	No information	No information	No information

10. Stability and Reactivity

Conditions to avoid : High temperature.
Incompatible materials : (Cadmium, Potassium Hydroxide, Sodium Hydroxide, Hydroxide Lithium) : Oxidizing agent.
Hazardous decomposition products : In case, there is a possibility that irritative or toxic gases or fumes are generated.

11. Toxicological Information

Indicate the information for each of components of nickel cadmium battery as below.

○Nickel (electrode plate)

Respiratory sensitization : The substance is classified into Category 2 for respiratory tract sensitizer in Japan Society For Occupational Health (JSOH) (Recommendations for allowable concentrations (2008)), and as respiratory tract sensitizer by Japanese Society of Occupational and Environmental allergy (2004) and DFG (MAK/BAT No. 43 (2007)). Based on these information, the substance was classified into Category 1.

Skin sensitization : There are human case reports of eczema (Initial Risk Assessment Report (NITE, CERI, NEDO) No. 69 (2008), EHC No. 108 (1991)), contact dermatitis (Initial Risk Assessment Report (NITE, CERI, NEDO) No. 69 (2008), EHC No. 108 (1991), IARC vol. 49 (1990)) and positive results in patch tests (Initial Risk Assessment Report (NITE, CERI, NEDO) No. 69 (2008), EHC No. 108 (1991)). In addition, the substance is classified into Category 1 for skin sensitizer by Japan Society For Occupational Health (JSOH) (Recommendations for allowable concentrations (2008)), and as a skin sensitizer by Japanese Society of Occupational and Environmental allergy (2004) and DFG (2007). Based on the available information, the substance was classified into Category 1.

Carcinogenicity : Based on the classifications of "2B" in IARC (IARC (1990)), "R" in NTP (NTP (2005)) and "Carcinogenicity. Category 3; R40" in EU classification (EU (2007)), the substance was classified into Category 2. intramuscular, intrathoracic and intraperitoneal administration tests in rats (Initial Risk Assessment Report (NITE, CERI, NEDO) No. 69 (2008), IARC vol. 49 (1990); Risk Assessment Documents (National Institute of Advanced Industrial Science and Technology) 19 (2006)).

Specific target organ toxicity (single exposure) : In an inhalation (single intratracheal exposure) test in male rats, cytotoxicity in the alveolar epithelial cells was observed at Occurrence of carcinoma and sarcoma is reported in inhalation, subcutaneous, 0.5 mg and higher concentrations (Initial Risk Assessment Report (NITE, CERI, NEDO) ver. 1.0 No. 69 (2008)). Inhalation exposure of humans induced "alveolar wall damage and edema in alveolar spaces in the lung and marked tubular necrosis in the kidney" (ATSDR (2005)). Based on the data, the substance was classified into Category 1 (respiratory system, kidney).

Specific target organ toxicity (repeated exposure) : It was reported that a high risk of mortality from respiratory disease is found among workers exposed occupationally to nickel oxides and metal nickel at concentrations of 0.04 mg/m3 and higher. In addition, rhinitis, sinusitis, nasal septal perforations and dysplasia of the nasal mucosa were reported in nickel refinery and nickel plating workers (Risk assessment report of nickel and nickel compounds (Ministry of Health, Labour and Welfare) (2009)). Based on the data, the substance was classified into Category 1 (respiratory system). In a 13-week inhalation exposure test in rats (OECD TG413), pulmonary alveolar proteinosis and glanuromatous inflammation in the lung were observed in females, and mononuclear cell infiltration in the lung was observed in males at a concentration of 1 mg/m3 (0.0001 mg/L), which falls within the guidance value range for Category 1, and higher levels (Initial Risk Assessment Report (NITE, CERI, NEDO) ver. 1.0 No. 69 (2008)). In a 21-month inhalation exposure test in rats, pleuritis, pneumonia, congestion and edema were observed at a dose level of 15 mg/m3 (0.015 mg/L) which is within the guidance value range for Category 1 (CaPSAR (1994)). In addition, pneumonia was noted at a dose level of 1 mg/m3 (0.001 mg/L) in a 6-month inhalation exposure test in rabbits. The substance is classified into T; R48/23 in EU classification.

○Cadmium (electrode plate)

Acute toxicity （Oral） : Category 4 based on SPECIES: Rat; ENDPOINT: LD50;VALUE:1140 mg/kg; (PATTY (2001)

Acute toxicity （Inhalation: Dusts and mists）	: Category 1 because of "SPECIES: Rat; ENDPOINT: LC50; VALUE: 0.0031 mg/L "(RTECS (2005)
Germ cell mutagenicity	:[Rationale for the Classification] Because in vivo data on this substance itself available for the classification were not obtained, information on the whole cadmium compounds (as cadmium ion, Cd2+) was used for evaluation. From (1), (2), positive reports in germ cells and somatic cells were obtained on water-soluble cadmium chloride. Although water solubility of this substance is low, it may cause hazards similar to cadmium chloride when incorporated in the body, therefore, it was classified in Category 2. The category was revised by considering knowledge on the whole cadmium compounds and water solubility of this substance. [Evidence Data] (1) It is reported that after administration of cadmium (mainly cadmium chloride), chromosomal aberrations in mouse spermatocytes and hamster oocytes and altered gene expression in mouse spermatid occurred (ATSDR (2012), IARC 58 (1993)). (2) It is reported that as the result of administrating cadmium chloride to mice, dose-dependent increases in the incidences of micronuclei, sister chromatid exchanges, and chromosomal aberrations were observed in the peripheral blood. Moreover, it is reported that increased single strand breaks in the DNA were observed in rats after administrating cadmium chloride (EU-RAR (2007), DFGOT Vol. 22 (2006), NICNAS IMAP (Accessed Dec. 2018)).
Carcinogenicity	: It was set as Category 1A based on the category of IARC: 1(1993).However, "as cadmium and its compound."
Reproductive toxicity	: There is no description about the general toxicity to parent animals. However, decreases in the number of litter, foetal death, the growth inhibition and malformation of reduction of fetus were observed, and inhibitions of growth and motor activity development in newborn were also observed (IARC 58 (1993) and EHC 134 (1992)). Therefore, according to the technical guide, it was classified into Category 2. In addition, there are existing classifications, such as EU-Annex 1:Repr.Cat.3;R62-63.
Specific target organ toxicity (single exposure)	: The substance was classified as Category 1 (lung, respiratory organs). Based on the reports, such as "when humans are exposed to the fumes generated by heating, they may develop bronchitis, pneumonia, pulmonary edema, etc, and die in some cases" (ACGIH (2001)), and it "causes fatal pulmonary edema in animals after exposure by inhalation in high concentrations" (EHC (J) 134 (1997)).
Specific target organ toxicity (repeated exposure)	: Chronic pneumonia, emphysema, proteinuria, etc. are observed in animal experiments (PATTY (5th, 2001)). "Long duration occupational exposure produces the serious chronic effects which is mainly concerned with lungs and kidney to humans. Moreover, the symptoms of osteoporosis or osteomalacia are affected. " (EHC(J) 134 (1997)), "Chronic exposures brings humans anemia, eosinophilia, rhinits, emphysema, and tooth decolorization, and renal disease". (ACGIH (7th, 2001)) "The primary target organ of chronic disorders is the kidney". (PATTY (5th, 2001)) They were classified into Category 1 (renal, lungs, blood, bones, respiratory systems) based on these descriptions.

○Cobalt (electrode plates)

Acute toxicity (Oral)	: Category 4
Acute toxicity (Inhalation: Dusts and mists)	: Category 1
Serious eye damage/eye irritation	: Category 2B
Respiratory sensitization	: Category 1A
Skin sensitization	: Category 1A
Carcinogenicity	: Category 2
Reproductive toxicity	: Category1B

Specific target organ toxicity (single exposure)	: Category 1 (respiratory system)
Specific target organ toxicity (repeated exposure)	: Category1 (respiratory system, heart, thyroid, blood system, genital organ(male))

○Sodium Hydroxide (electrolyte)

Skin corrosion/irritation	: Causes severe skin burns Sodium hydroxide : In a pig test using application of 2N (8%), 4N (16%) and 6N (24%) solutions on the abdominal region, gross blisters developed within 15minutes of application and the 8 and16% solutions produced severe necrosis in all epidermal layers with necrosis extending deeper into the subcutaneous tissue. Additionally, there is a report that severe necrosis occurred after application of a 5% solution to the skin of rabbits for 4-hour. Based on these data, the substance was classified into category 1B. As relevant information, the pH is 12 (0.05%). For humans, 0.5-4% solutions were irritating to the skin, and in skin irritation tests with a 0.5% solution, 61% of the volunteers showed positive skin irritation reactions.
Serious eye damage/eye irritation	: Causes serious eye damage Sodium hydroxide: Based on a report that the corrosive concentration for rabbit eyes was 1.2% or higher than 2%, and a pH of 12 (0.05%), it was classified into category 1.
Specific target organ toxicity (single exposure)	: Causes damage to organs (respiratory organs) Sodium hydroxide : Based on the description that acute inhalation exposure of dust or mist causes mucous membrane irritation followed by cough and breathing difficulty, and more intensive exposure may cause pulmonary edema or shock, it was classified into category1 (respiratory organs).

○Potassium Hydroxide (electrolyte)

Acute toxicity (Oral)	: Harmful if swallowed.
Skin corrosion/irritation	: Causes severe skin burns Potassium hydroxide: The substance (solid) is described to be corrosive. Exposure to human skin caused chemical burns (3rddegree). Battery electrolyte (25％ solution of the substance) caused tissue corrosion associated with small perforation. In rabbit skin irritation tests, corrosiveness was observed. Thus, it was classified into category 1B.
Serious eye damage/eye irritation	: Causes serious eye damage Potassium hydroxide : Based on the statements that it caused irreversible damage to humans and that it was corrosive to rabbits, it was classified into category 1
Specific target organ toxicity (single exposure)	: Causes damage to organs (respiratory organs) Potassium hydroxide: The substance acts as strong alkali on skin and mucosa, and inhalation exposure to dust or mist may cause upper respiratory tract irritation and tissue damages, leading to nasal septum damage and pulmonary edema. Thus, it was classified into category 1 (respiratory organs).
Specific target organ toxicity (repeated exposure)	: Causes damage to organs (respiratory organs) through prolonged or repeated exposure Potassium hydroxide: Human studies have shown that inhalation of the substance (dust, mist) causes upper airway inflammation, which may result in nasal septum ulceration as a chronic effect. However, there is no studies on airborne concentrations and incidence of lesions. Exposure to dust or mist of the substance may cause nasal septum lesions and irritation of the eyes and respiratory tract. Although there is not sufficient data, it is clear that the substance is alkaline and inhalation causes respiratory inflammation. Thus, the substance was classified into category 1 (respiratory organs)

Aspiration hazard	: May be fatal if swallowed and enters airways Potassium hydroxide: Studies show that in fatal cases of unintentional ingestion of the substance, the cause of death involves aspiration into the esophagus to trachea and pneumonia, and aspiration of alkali into airway causes fatal injuries to the larynx, trachea/bronchus, and lung. Thus, it was classified into category 1.

○Hydroxide Lithium (electrolyte)

Acute toxicity （Inhalation: Dusts and mists）	: Based on a LC50 value of 0.96 mg/L/4h for rats (Japan Society For Occupational Health (JSOH), Recommendations for allowable concentrations (1995)), the substance was classified into Category 3. Although saturated vapour pressure concentration is unknown, the test was considered to be conducted for dust due to its solid state (GHS definition) and high melting point (471 degC).
Skin corrosion/irritation	: Since the solution of the substance is highly alkaline with a pH of approximately 12 (50 degC, 50g/L) (GESTIS (access on Sep. 2009)) and there is a report of "highly corrosive, irritating to skin" (Japan Society For Occupational Health (JSOH), Recommendations for allowable concentrations (1995)), the substance was classified into Category 1.
Serious eye damage/eye irritation	: Since a solution of the substance is highly alkaline with a pH of approximately 12 (50 degC, 50g/L) (GESTIS (access on Sep. 2009)) and there is a report of "highly corrosive, droplet and vapour irritating to eye" (Japan Society For Occupational Health (JSOH), Recommendations for allowable concentrations (1995)), the substance was classified into Category 1.
Reproductive toxicity	: There are no available data for the substance. However, it was reported that the therapeutic uses of lithium in 225 pregnant women resulted in 25 infants with congenital malformation, so lithium is contraindicated in women of childbearing potential (ACGIH (2001)). Additionally, lithium is classified into a teratogenic agent in "Chemically Induced Birth Defects" (Birth Defects 3rd. (2000)). Based on case reports of congenital heart disease in pregnant women taking lithium, teratogenicity for human is suggested in "Catalog of Teratogenic Agents" (Teratogenic 12th (2007)). From above information, the substance was classified into Category 1A.
Specific target organ toxicity (single exposure)	: The substance is highly alkaline and there is a report of "highly corrosive, droplet and vapour irritating to the upper respiratory tract and mucous membrane of oral cavity". In a rat test with inhalation exposure (dust) at concentration of 960 mg/m3/4h, necrotic inflammation of the pharynx and nose was observed (Japan Society For Occupational Health (JSOH), Recommendations for allowable concentrations (1995)). Since this effect correspond to Category 1 based on guidance value range and a inhalation LC50 value for rats (960 mg/m3), the substance was classified into Category 1 (respiratory tract). The substance was determined as dust due to its solid state (GHS definition) and high melting point of 471 degC.

※Regard to health hazards, the classification not mentioned above is 'Not applicable' or, 'Classification not possible' or `Not classified’ currently.

12. Ecological Information

Indicate the information for each of components of nickel cadmium battery as below.

○Cadmium (plate)

Hazardous to the aquatic environment (acute)	:From 72-hour ErC50 = 0.07 mg/L for algae (Pseudokirchneriella subcapitata) (EU-RAR, 2003), it was classified in Category 1.
Hazardous to the aquatic environment (chronic)	:From unknown environmental dynamics of an inorganic compound and 10-day NOEC = 0.008 mg/L for fish (Salvelinus fontinalis) (EU-RAR, 2003), it was classified in Category 1.

○Cobalt (electrode plates)

Hazardous to the aquatic environment (acute) :Category 1
Hazardous to the aquatic environment (chronic) :Category 1

○Sodium Hydroxide (electrolyte):

Hazardous to the aquatic environment (acute) :Classified into Category 3 from its 48h-LC50 = 40 mg/L for Crustacea (Cenodaphnia quadrangular) (SIDS, 2004, etc).

13. Precautions for Disposal

Disposal considerations : In the disposal, follow “Waste Management and Public Cleansing Law” and the standards of the local government.
Entrust disposal to industrial waste disposal contractor who have obtained a license from local governor, otherwise if the local government is performing waste disposal, entrust them disposal.

14. Transport Information

International regulations(dangerous goods)

Inland transport : Follow the regulation under ADR/RID.
Sea transport : Follow the regulation under IMO.
Air transport : Follow the regulation under ICAO/IATA.
UN number : No applicable.
UN class : -
Proper shipping name : -
Packing group : -
Special requirements : IATA A123
Sealed Nickel Cadmium batteries are considered to be "dry cell" batteries and are not subjected to dangerous goods regulation for the purpose of transportation by The U.S. Department of Transportation (DOT), The International Civil Aviation Administration (ICAO), The International Air Transport Association (IATA) or The International Maritime Dangerous Good regulations (IMDG).
International air transport is not restricted provided that, as stated in IATA special provision A123, batteries and battery powered devices/equipments being transported by air are protected from short-circuiting.
The IATA / ICAO regulations require the words “Not Restricted” and “Special ProvisionA123” to appear on the air waybill, when an air waybill is used.
Marine pollutant : Not applicable

15. Regulatory Information

TSCA (Toxic Substances Control Act)

Each component parts of battery is listed in the TSCA Registry as follows.

Components	Chemical Formula	TSCA Status
Cadmium and compounds	Cd	Listed
Nickel and compounds	Ni	Listed
Cobalt and compounds	Co	Listed
Potassium Hydroxide Sodium Hydroxide Hydroxide Lithium	KOH NaOH LiOH	Listed

16. Other Information

Electrochemical reaction formula:

Positive		Electrolyte		Negative		Positive	Negative
$2NiOOH$	+	$2H_2O$	+	Cd	Charge<---- ---->Discharge	$2Ni(OH)_2$	$Cd(OH)_2$
Nickel oxyhydroxide		Water		Cadmium		Nickel hydroxide	Cadmium hydroxide

Reference:

Globally Harmonized System of classification and labeling of chemicals, (6th ed., 2015), UN
JIS Z 7253:2019

1) NITE GHS classification data.
2) ECHA Home page (http://echa.europa.eu/information-on-chemicals)
3) NITE CHRIP (http://www.safe.nite.go.jp/japan/sougou/view/SystemTop_jp.faces)

Notice:

The contents described in this SDS are prepared based on the data and information currently available to us. However, it does not intend to be any guarantees in regard to content, physical and chemical properties, hazards, etc.

Please handle this product in the responsibility of the user after referring to this SDS.

In addition, the precautions are intended for normal handling. Please use under implementing safety measures that are suitable for application/usage if you want to special handling.