

Originating DCR		REVISIONS		
REV	DESCRIPTION	DATE	APPROVED	
P	Revised per DCR 54251 7/12/99 BY	7/12/99	BB	
Q	Revised Safety Sheets and Obsolete Old Sheets per DCR 55678 7/2/03 DM	8/25/03	BB	
R	Updated Battery MSDS to standard ANSI format per DCR 56456	02/18/05	BB	
T	Remove reference to UN2800 in section 14 of MSDS per DCR 56484	03/11/05	BB	
U	Correct Emergency Phone Number on MSDS per DCR 56538	5/2/05	BB	
V	Change Revision Date on MSDS Sheets per DCR 57477	03/21/08	BB	
W	Revised Per DCR 58143 Add Hazard Ratings and added HMIS to Key Legend. CLW 03/16/10	03/24/10	BB	
Y	Revised Per DCR 59016, Add Check Box for Review; and date was Mar 16, 2010 ATH 03/21/13	3/26/13	GC	
AA	Revised Per DCR 59437, Converted from MSDS to SDS	10/31/14	JV	
AB	Revised Per DCR 59619, Remove UN numbers, insert Product Composition %	2/24/15	JV	
AC	Revised Per DCR 59846, Updated format	10/19/15	JV	
AD	Revised Per DCR 60376, Three year update no longer applies WHMIS 2015	05/22/18	JV	
AE	Revised Per DCR 60559, Revise to GHS Rev 3, Remove R and S phrases. Add Worldwide Chemtrec #	05/30/19	JV	

REFERENCE SPECIFICATION

APPROVALS		DATE	MarathonNorco Aerospace, Inc. WACO, TEXAS				
ORIGINATOR LFL		07/08/88	SAFETY DATA SHEETS				
CHECKED							
APPROVED GHV		05/20/97	SIZE	FSCM	DWG NO	REV	AE
DIST. CODE		14A	A	74025	RS-95112		
SHEET 1 OF 15							

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NICKEL CADMIUM BATTERY

SECTION 1: Identification

Product identifier

Product name: NICKEL CADMIUM BATTERY

Synonyms: Alkaline Battery

Product code: NICKEL CADMIUM BATTERY

Additional information: This product is a manufactured article as defined by OSHA 29 CFR 1910.1200(b)(6)(iv). As such, it is not subject to the Hazard Communication Standard (HCS). Sealed batteries are not hazardous. However, hazardous materials may be released if the battery case is compromised due to fire, explosion, extreme abuse, misuse or improper disposal. The hazard classification, prevention and response measures below pertain only to such a scenario.

Recommended use of the product and restriction on use

Relevant identified uses: Battery

Uses advised against: Any uses other than recommended above.

Reasons why uses advised against: Not determined or not applicable.

Manufacturer or supplier details

Manufacturer:

United States

Marathon Norco Aerospace, Inc.
8301 Imperial Drive
Waco, Texas 76712-6588
254-776-0650

Emergency telephone number:

United States

Chemtrec U.S. & Canada
800-424-9300 or 1-703-527-3887
Chemtrec Worldwide
1-703-741-5970

SECTION 2: Hazard(s) identification

GHS classification:

Acute toxicity (inhalation), category 2
Acute toxicity (oral), category 4
Skin corrosion, category 1
Serious eye damage, category 1
Skin sensitization, category 1
Respiratory sensitization, category 1
Specific target organ toxicity - repeated exposure, category 1
Carcinogenicity, category 1A
Germ cell mutagenicity, category 1B
Reproductive toxicity, category 1B

Label elements

Hazard pictograms:



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Signal word: Danger

Hazard statements:

- H302 Harmful if swallowed.
- H330 Fatal if inhaled.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H340 May cause genetic defects.
- H350 May cause cancer.
- H360 May damage fertility; May damage the unborn child.
- H372 Causes damage to organs (lung, kidney, bone) through prolonged or repeated exposure via inhalation.

Precautionary statements:

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P260 Do not breathe dust/fume/gas/mist/vapors/spray.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required.
- P284 Wear respiratory protection.
- 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.
- 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 CENTER or doctor/physician.
- P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P320 Specific treatment is urgent (see sections 4 - 8 of this SDS and any additional information on the product label).
- P321 Specific treatment (see sections 4 - 8 of this SDS and any additional information on the product label).
- P333+P313 If skin irritation or a rash occurs: Get medical advice/attention
- P363 Wash contaminated clothing before reuse
- P308+P313 If exposed or concerned: Get medical advice/attention
- P405 Store locked up.
- P403+P233 Store in a well ventilated place. Keep container tightly closed.
- P501 Dispose of contents/container to in accordance with all local, regional state and federal regulations.

Hazards not otherwise classified: None

SECTION 3: Composition/information on ingredients

Identification	Name	Weight %
CAS number: 12054-48-7	Nickel Hydroxide	7-13
CAS number: 7440-02-0	Nickel (solid)	20-36
CAS number: 21041-95-2	Cadmium Hydroxide	6-15

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CAS number: 7440-43-9	Cadmium	6-15
CAS number: 21041-93-0	Cobalt Dihydroxide	0.5-2
CAS number: 7440-48-4	Cobalt	0.5-2
CAS number: 1310-58-3	Potassium hydroxide	1-4
CAS number: 1310-65-2	Lithium Hydroxide	0.1-1

Additional Information: None

SECTION 4: First aid measures

Description of first aid measures

General notes:

SEALED BATTERIES ARE NOT HAZARDOUS. THE FIRST AID MEASURES PROVIDED BELOW ARE FOR CONTACT WITH INTERNAL BATTERY COMPONENTS

After inhalation:

Treatment is urgent. Seek emergency medical treatment. If inhaled, removed person to fresh air and place in a position comfortable for breathing. Keep person at rest. If breathing is difficult, administer oxygen. If breathing has stopped, provide artificial respiration

After skin contact:

Remove contaminated clothing and shoes. Rinse skin with copious amounts of water [shower] for several minutes. Seek immediate medical attention. Launder contaminated clothing before reuse

After eye contact:

Immediately rinse eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Seek immediate medical attention

After swallowing:

If swallowed, DO NOT induce vomiting unless told to do so by a physician or poison control center. Rinse mouth with water. Never give anything by mouth to an unconscious person. If spontaneous vomiting occurs, place on the left side with head down to prevent aspiration of liquid into the lungs. Seek immediate medical attention

Most important symptoms and effects, both acute and delayed

Acute symptoms and effects:

THE ACUTE EFFECTS AND SYMPTOMS DESCRIBED BELOW ARE FOR EXPOSURE TO THE INTERNAL BATTERY COMPONENTS

Skin contact may cause irreversible skin damage / chemical burns. Symptoms include: redness, inflammation, blisters, burns, visible tissue necrosis and pain. Mild exposure may cause an allergic skin reaction, characterized by redness, inflammation, itching and rash

Eye contact may cause serious eye damage. Symptoms include redness, inflammation, tearing, burning, corneal opacification and loss of vision

Harmful if swallowed. Ingestion may result in chemical burns of the mouth, throat and digestive tract
Inhalation may be fatal. Acute exposure may lead to depression of the central nervous system.

Symptoms include dizziness, drowsiness, headache, breathing difficulties, nausea, vomiting, abdominal pain, and lowering of consciousness. Exposure far above any stated OELs may result in unconsciousness and death. Adverse effects are dependent on exposure (dose, concentration, contact time)

Delayed symptoms and effects:

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THE DELAYED EFFECTS AND SYMPTOMS DESCRIBED BELOW ARE FOR EXPOSURE TO THE INTERNAL BATTERY COMPONENTS

Prolonged and/or repeated exposure to Nickel, Nickel Hydroxide, Cadmium, Cadmium Hydroxide, and Cobalt Hydroxide may cause cancer

May damage fertility and the unborn child. Nickel Hydroxide and Cobalt Hydroxide are toxic to reproduction

May cause genetic defects. Nickel Hydroxide, Cadmium, Cadmium Hydroxide, and Cobalt Hydroxide are suspected or known germ cell mutagens

Prolonged or repeated exposure to Nickel, Nickel Hydroxide, Cadmium and Cadmium Hydroxide may cause damage to organs (lung, kidney, bone) via inhalation

Immediate medical attention and special treatment

Specific treatment:

If exposed to internal battery components, seek immediate medical advice/attention

Notes for the doctor:

Treat symptomatically

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media:

Use extinguishing media for the surrounding fire or CO₂, Dry Chemical, or Foam Water Spray

Unsuitable extinguishing media:

Do not use Water jet

Specific hazards during fire-fighting:

Under normal conditions the battery cells are nonflammable. During a fire irritating toxic and corrosive fumes may be released including cadmium oxides, nickel oxides, cobalt oxides, potassium oxides and lithium oxides

Special protective equipment for firefighters:

Use self contained breathing apparatus and protective clothing to prevent contact with electrolyte solution. The electrolyte solution is corrosive to all human tissue

Special precautions:

Not determined or not applicable.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Should a battery assembly be dropped, causing the lid to open and spilling battery cells, or a package of individual battery cells ruptures, spilling battery cells, wear gloves and other personal protective equipment as appropriate to prevent contact with the electrolyte. Reference Section 8. Ventilate area and extinguish any sources of ignition. Avoid breathing fume, mist, vapor and spray. Avoid contact with eyes, skin and clothing. Do not walk through spilled material

Environmental precautions:

Should not be released into the environment
Prevent from reaching drains, sewer or waterway

Methods and material for containment and cleaning up:

If electrolyte has been spilled use an absorbent like vermiculite to clean up and place in drums for later disposal. Flush the spill area with copious amounts of water. Place material into a chemical waste container. If the cells are damaged as a result of the spill, they should be repackaged in a 55-gallon drum with a liner and shipped to a fully permitted RCRA TSDRF for recycling. Disposal should be made in accordance with federal, state and local regulations as stated in Section 13

Reference to other sections:

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Section 8: Personal Protective Equipment

Section 13: Disposal

SECTION 7: Handling and storage

Precautions for safe handling:

Store in the original factory packaging at room temperature in a cool, dry place until ready for use. Charging of the battery assembly or individual cell should only be done in a well-ventilated area. Do not inhale fumes or vapor. Wear recommended personal protective equipment (see Section 8). Avoid contact with eyes, skin and clothing. Wash hands and face thoroughly after handling. Care should be taken during the handling and charging of individual battery cells to prevent dropping of tools or other metallic objects on top of the cell that could short the battery cell terminals, causing the release of high energy or heat, and electrolyte. Do not eat, drink or smoke while handling.

Conditions for safe storage, including any incompatibilities:

Protect from freezing and physical damage.

Stored in the original factory packaging at room temperature in a cool, dry place until ready for use.

SECTION 8: Exposure controls/personal protection

Only those substances with limit values have been included below.

Occupational Exposure limit values:

Country (Legal Basis)	Substance	Identifier	Permissible concentration
United States (OSHA)	Cadmium Hydroxide	21041-95-2	OSHA PEL - TWA: 5 µg/m ³ (as Cadmium) - 8 hr.
	Cadmium Hydroxide	21041-95-2	OSHA PEL - Action Level: 2.5 µg/m ³ (as Cadmium)
	Cobalt Dihydroxide	21041-93-0	OSHA PEL - TWA: 0.1 mg/m ³ (as Cobalt) - 8 hr.
	Cobalt	7440-48-4	OSHA PEL - TWA: 0.01mg/m ³ - 8 hr.
	Nickel Hydroxide	12054-48-7	OSHA PEL - TWA: 1 mg/m ³ (as Nickel) - 8 hr.
	Nickel (solid)	7440-02-0	Z-1-A TWA: 1 mg/m ³ (as Ni)
	Nickel (solid)	7440-02-0	Z-1 PEL: 1 mg/m ³ (as Ni)
	Cadmium	7440-43-9	OSHA PEL TWA 0.005 mg/m ³ as Cd
ACGIH	Potassium hydroxide	1310-58-3	ACGIH TLV C 2.0 mg/m ³
	Cobalt Dihydroxide	21041-93-0	ACGIH TLV - TWA: 0.02 mg/m ³ (as Cobalt) - 8 hr.
	Nickel Hydroxide	12054-48-7	ACGIH TLV - TWA: 0.1 mg/m ³ - 8 hr.
	Nickel (solid)	7440-02-0	8-Hour Exposure Limit (TLV-TWA): 1.5 mg/m ³ (inhalable fraction)
	Nickel Hydroxide	12054-48-7	ACGIH TLV - TWA: 0.2 mg/m ³ (insoluble inorganic Nickel compounds - inhalable particulate matter) - 8 hr.
	Cadmium Hydroxide	21041-95-2	ACGIH TLV - TWA: 0.002 mg/m ³ (respirable particulate matter as Cadmium) - 8 hr.
	Cadmium Hydroxide	21041-95-2	ACGIH TLV - TWA: 0.01 mg/m ³ (as Cadmium) - 8 hr.

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Country (Legal Basis)	Substance	Identifier	Permissible concentration
	Nickel Hydroxide	12054-48-7	ACGIH TLV - TWA: 1.5 mg/m ³ (inhalable particulate matter as Nickel) - 8 hr.
	Cobalt	7440-48-4	ACGIH TLV - TWA: 0.02 mg/m ³ - 8 hr.
	Cadmium	7440-43-9	ACGIH TLV TWA 0.01 mg/m ³ as Cd (0.002 mg/m ³ as Cd, respirable fraction)
NIOSH	Cobalt	7440-48-4	NIOSH REL (TWA): 0.05 mg/m ³
	Cobalt Dihydroxide	21041-93-0	NIOSH REL - TWA: 0.05 mg/m ³ (as Cobalt)
	Potassium hydroxide	1310-58-3	NIOSH REL C 2.0 mg/m ³
	Cobalt	7440-48-4	NIOSH IDLH: 20 mg/m ³
	Cobalt Dihydroxide	21041-93-0	NIOSH - IDLH: 20 mg/m ³ (as Cobalt)
	Nickel (solid)	7440-02-0	REL (for up to a 10-hour workday during a 40-hour workweek): 0.015 mg/m ³ (as Ni)
	Nickel Hydroxide	12054-48-7	NIOSH REL - TWA: 0.015 mg/m ³ (as Nickel) - 8 hr.
	Cadmium Hydroxide	21041-95-2	NIOSH REL - LOQ (lowest feasible concentration): 0.1 mg/m ³
	Nickel (solid)	7440-02-0	IDLH: 10 mg/m ³
	Cadmium Hydroxide	21041-95-2	NIOSH - IDLH: 9 mg/m ³
	Cadmium	7440-43-9	NIOSH IDLH 9 mg/m ³ as Cd
WEEL	Lithium Hydroxide	1310-65-2	WEEL - CEILING: 1.0 mg/m ³

Biological limit values:

No biological exposure limits noted for the ingredient(s).

Information on monitoring procedures:

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls.

Biological monitoring may also be appropriate for some substances.

Appropriate engineering controls:

Charge battery assemblies and individual battery cells in a well ventilated area. Handling of shorted battery cells should only be done while using the PPE designated below. A shorted battery cell could vent releasing electrolyte in a mist or spray. Flammable hydrogen gas may be released during venting.

Always provide good general, mechanical room ventilation where this chemical/material is used. SPECIAL VENTILATION CONTROLS: Use this material inside totally enclosed equipment, or use it with local exhaust ventilation at points where vapors can be released into the work space air.

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Personal protection equipment

Eye and face protection:

Safety goggles or glasses, or appropriate eye protection.

Skin and body protection:

Wear chemical impervious gloves at all times while working with this product. Recommended glove types include: Laminated Film, Nitrile, or Tri-polymer. Check with your company's glove supplier to ensure chemical resistance.

Wear suitable protective clothing to prevent skin contact.

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Respiratory protection:

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or the European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator

General hygienic measures:

Avoid contact with skin, eyes and clothing.
Wash hands before breaks and at the end of work.
Wash contaminated clothing before reuse.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance	White to light gray viscous liquid (Electrolyte Solution)
Odor	Odorless
Odor threshold	Not available
pH	Not Applicable
Melting point/freezing point	Not Applicable
Initial boiling point/range	BOILING POINT: 2415 °F (electrolyte)
Flash point (closed cup)	Not Applicable
Evaporation rate	< 1 (Butyl Acetate = 1) (45% KOH)
Flammability (solid, gas)	Not Applicable
Upper flammability/explosive limit	Not Applicable
Lower flammability/explosive limit	Not Applicable
Vapor pressure	1317 °F : 1 mmHg (electrolyte with 45% KOH)
Vapor density	Not Applicable
Density	Not Applicable
Relative density	1.46 (electrolyte with 45% KOH)
Solubilities	In water: 100% (electrolyte)
Partition coefficient (n-octanol/water)	Not Applicable
Auto/Self-ignition temperature	Not Applicable
Decomposition temperature	Not Applicable
Dynamic viscosity	Not Applicable
Kinematic viscosity	Not Applicable
Explosive properties	Not Applicable
Oxidizing properties	Not Applicable

Other information

SECTION 10: Stability and reactivity

Reactivity:

Not reactive under recommended storage and handling conditions.

Chemical stability:

Stable under recommended storage and handling conditions.

Possibility of hazardous reactions:

Hazardous reactions not anticipated under recommended storage and handling conditions.

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Conditions to avoid:

When shorted the cell will vent releasing cadmium fumes, electrolyte and hydrogen gas.

Incompatible materials:

Acids

Hazardous decomposition products:

During a fire, irritating, toxic and corrosive fume and gas may be released. Thermal decomposition products include: cadmium fumes, nickel fumes, water vapor, plastic vapor, and hydrogen gas.

SECTION 11: Toxicological information

Acute toxicity

Assessment:

Harmful if swallowed

Fatal if inhaled

Product data: No data available.

Substance data:

Name	Route	Result
Nickel Hydroxide	oral	LD50 Rat: 1515mg/kg
	dermal	LD50 Rat: >2000 mg/kg
	inhalation	LC50 Rat: 1200mg/m ³ (4H)
Cadmium	oral	LD50 Rat: 2330mg/kg
	dermal	LC50 - Rat - 25 mg/m ³ (30 min,)
Cobalt	oral	LD50 Rat: 6171mg/kg
Potassium hydroxide	oral	LD50 Rat: 333 mg/kg
Nickel (solid)	oral	LD50 Rat: 5000mg/kg
Lithium Hydroxide	oral	LD50 Oral - Rat - 210 mg/kg
	inhalation	LC50 Inhalation - Rat - 960 mg/m ³ 4H

Skin corrosion/irritation

Assessment: Based on available data, the classification criteria are not met.

Product data:

Causes severe skin burns and eye damage.

Substance data:

Name	Result
Nickel Hydroxide	Causes skin irritation.
Potassium hydroxide	Causes severe skin burns.
Lithium Hydroxide	Causes severe skin burns.

Serious eye damage/irritation

Assessment:

Causes serious eye damage

Product data:

No data available.

Substance data:

Name	Result
Potassium hydroxide	Causes serious eye damage
Lithium Hydroxide	Causes serious eye damage
Cobalt Dihydroxide	Causes serious eye irritation.

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Respiratory or skin sensitization

Assessment:

May cause an allergic skin reaction

May cause allergy or asthma symptoms or breathing difficulties if inhaled

Product data:

No data available.

Substance data:

Name	Result
Nickel (solid)	May cause an allergic skin reaction.
Nickel Hydroxide	May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Cobalt	May cause an allergic skin reaction.
Cobalt	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Cobalt Dihydroxide	May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Carcinogenicity

Assessment:

May cause cancer

Product data: No data available.

Substance data:

Name	Species	Result
Nickel (solid)	Not applicable	Suspected of causing cancer.
Nickel Hydroxide	Not Applicable	May cause cancer via inhalation.
Cadmium Hydroxide	Not Applicable	May cause cancer via inhalation.
Cadmium	Not Applicable	May cause cancer via inhalation.
Cobalt Dihydroxide	Not Applicable	May cause cancer via inhalation.

International Agency for Research on Cancer (IARC):

Name	Classification
Nickel Hydroxide	Group 1
Nickel (solid)	Group 2B
Cadmium Hydroxide	Group 1
Cobalt Dihydroxide	Group 2B
Cobalt	Group 2B
Cadmium	Group 1

National Toxicology Program (NTP):

Name	Classification
Nickel Hydroxide	Known to be human carcinogens
Nickel (solid)	Reasonably anticipated to be human carcinogens
Cadmium Hydroxide	Known to be human carcinogens
Cadmium	Known to be human carcinogens

Germ cell mutagenicity

Assessment:

May cause genetic defects

Product data:

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No data available.

Substance data:

Name	Result
Nickel Hydroxide	Germ Cell Mutagen, Category 2:H341 - Suspected of causing genetic defects.
Cadmium Hydroxide	Germ Cell Mutagen, Category 1B:H340 - May cause genetic defects.
Cadmium	Germ Cell Mutagen, Category 2:H341 - Suspected of causing genetic defects.

Reproductive toxicity

Assessment:

May damage fertility or the unborn child

Product data:

No data available.

Substance data:

Name	Result
Nickel Hydroxide	Reproductive Toxin, Category 1B:H360D - May damage the unborn child.
Cadmium	Reproductive Toxin, Category 2:H361fd - Suspected of damaging fertility; Suspected of damaging the unborn child.
Cobalt Dihydroxide	Reproductive Toxicity, Category 1B:H360fd - May damage fertility; May damage the unborn child.
Cobalt	NOAEL (fertility): 30 mg/kg bw/day per ECHA key study.

Specific target organ toxicity (single exposure)

Assessment: Based on available data, the classification criteria are not met.

Product data:

No data available.

Substance data: No data available.

Specific target organ toxicity (repeated exposure)

Assessment:

Causes damage to organs through prolonged or repeated exposure

Product data:

No data available.

Substance data:

Name	Result
Nickel (solid)	Causes damage to organs (lung, kidney, bone) through repeated or prolonged exposure via inhalation.
Nickel Hydroxide	Causes damage to organs (lung, kidney, bone) through repeated or prolonged exposure via inhalation.
Cadmium Hydroxide	Causes damage to organs (lung, kidney, bone) through repeated or prolonged exposure via inhalation.
Cadmium	Causes damage to organs (lung, kidney, bone) through repeated or prolonged exposure via inhalation.

Aspiration toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data:

No data available.

Substance data: No data available.

Information on likely routes of exposure:

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No data available.

Symptoms related to the physical, chemical and toxicological characteristics:

THE ADVERSE SYMPTOMS AND EFFECTS DESCRIBED BELOW ARE FOR EXPOSURE TO THE INTERNAL BATTERY COMPONENTS.

Skin contact may cause irreversible skin damage / chemical burns. Symptoms include: redness, inflammation, blisters, burns, visible tissue necrosis and pain. Mild exposure may cause an allergic skin reaction, characterized by redness, inflammation, itching and rash. Eye contact may cause serious eye damage. Symptoms include redness, inflammation, tearing, burning, corneal opacification and loss of vision. Harmful if swallowed. Ingestion may result in chemical burns of the mouth, throat and digestive tract. Inhalation may be fatal. Acute exposure may lead to depression of the central nervous system. Symptoms include dizziness, drowsiness, headache, breathing difficulties, nausea, vomiting, abdominal pain, and lowering of consciousness. Exposure far above any stated OELs may result in unconsciousness and death. Adverse effects are dependent on exposure (dose, concentration, contact time).

Prolonged and/or repeated exposure to Nickel, Nickel Hydroxide, Cadmium, Cadmium Hydroxide, and Cobalt Hydroxide may cause cancer. May damage fertility and the unborn child. Nickel Hydroxide and Cobalt Hydroxide are toxic to reproduction. May cause genetic defects. Nickel Hydroxide, Cadmium, Cadmium Hydroxide, and Cobalt Hydroxide are suspected or known germ cell mutagens. Prolonged or repeated exposure to Nickel, Nickel Hydroxide, Cadmium and Cadmium Hydroxide may cause damage to organs (lung, kidney, bone) via inhalation.

Other information:

No data available.

SECTION 12: Ecological information

Acute (short-term) toxicity

Assessment:

Very toxic to aquatic life

Product data: No data available.

Substance data:

Name	Result
Cadmium	NOEC - Parachlorella kessleri - 0.002 mg/L - 5 days
	LC50 - Chrysophrys major - 0.56 mg/L - 72 hr
Cobalt	LC50: > 100 mg/L, 96h static (Brachydanio rerio)
Potassium hydroxide	LC50: 80 mg/L, 96h static (Gambusia affinis)
Lithium Hydroxide	LC50 - Danio rerio (zebra fish) - ca. 62.2 mg/l - 96 h (OECD Test Guideline 203)
	EC50 - Daphnia magna (Water flea) - 19.1 mg/l - 48 h (OECD Test Guideline 202)
	EC50 - Pseudokirchneriella subcapitata (algae) - ca. 23.75 mg/l - 72 h (OECD Test Guideline 201)
	EC50 - Sludge Treatment - 180.8 mg/l - 3 h (OECD Test Guideline 209)

Chronic (long-term) toxicity

Assessment: Based on available data, the classification criteria are not met.

Product data: No data available.

Substance data: No data available.

Persistence and degradability

Product data: No data available.

Substance data: No data available.

Bioaccumulative potential

Product data: No data available.

Substance data: No data available.

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Mobility in soil

Product data: No data available.

Substance data: No data available.

Other adverse effects: No data available.


SECTION 13: Disposal considerations

Disposal methods:


It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities WASTE DISPOSAL: Follow the waste disposal requirements of your country, state, or local authorities. All nickel-cadmium battery cells should be prevented from entering a landfill facility. Nickel-Cadmium storage batteries are universal waste under RCRA Regulations. They should be recycled and may be returned to MarathonNorco Aerospace, Inc. for recycling or batteries should be shipped to a RCRA permitted TSDRF for recycling of the metals content. CONTAMINATED PACKAGING: Contaminated packaging material should be disposed of as stated above. RINSATE: Do not dispose of rinse water containing product in a sanitary sewer system or storm water drainage system

SECTION 14: Transport information


United States Transportation of dangerous goods (49 CFR DOT)

UN number	UN 2795 (ONLY APPLICABLE TO WET CELL BATTERIES) DRY CELL BATTERIES - NOT REGULATED USING SPECIAL PROVISION 130
UN proper shipping name	BATTERY, WET, FILLED W/ ALKALI
UN transport hazard class(es)	8 
Packing group	III
Environmental hazards	None
Special precautions for user	None

International Maritime Dangerous Goods (IMDG)

UN number	UN 2795 (ONLY APPLICABLE TO WET CELL BATTERIES) DRY CELL BATTERIES - NOT REGULATED
UN proper shipping name	BATTERY, WET, FILLED W/ ALKALI
UN transport hazard class(es)	8 
Packing group	III
Environmental hazards	None
Special precautions for user	None

International Air Transport Association Dangerous Goods Regulations (IATA-DGR)

UN number	UN 2795 (ONLY APPLICABLE TO WET CELL BATTERIES) DRY CELL BATTERIES - NOT REGULATED USING SPECIAL PROVISION A123
UN proper shipping name	BATTERY, WET, FILLED W/ ALKALI, ELECTRIC CHARGE
UN transport hazard class(es)	8 
Packing group	III
Environmental hazards	None

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NICKEL CADMIUM BATTERY

Special precautions for user	None
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SECTION 15: Regulatory information

United States regulations

Inventory listing (TSCA): All product ingredients are listed or exempt from listing.

Significant New Use Rule (TSCA Section 5): Not determined.

Export notification under TSCA Section 12(b): Not determined.

SARA Section 302 extremely hazardous substances: No product ingredients listed.

SARA Section 313 toxic chemicals:

12054-48-7	Nickel Hydroxide	Listed
7440-02-0	Nickel (solid)	Listed
7440-48-4	Cobalt	Listed
7440-43-9	Cadmium	Listed
Not Applicable	Nickel Compounds (N495 - SARA 313 Code)	Listed
Not Applicable	Cadmium Compounds (N078 - SARA 313 Code)	Listed
Not Applicable	Cobalt Compounds (N096 - SARA Code)	Listed

CERCLA:

12054-48-7	Nickel Hydroxide	Listed	10 lbs.
7440-02-0	Nickel (solid)	Listed	100
7440-43-9	Cadmium	Listed	10
1310-58-3	Potassium hydroxide	Listed	1,000 lb

RCRA:

Not Applicable	Cadmium	Listed	D006
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Section 112(r) of the Clean Air Act (CAA):

12054-48-7	Nickel Hydroxide	Listed
21041-95-2	Cadmium Hydroxide	Listed

Massachusetts Right to Know:

12054-48-7	Nickel Hydroxide	Listed
7440-02-0	Nickel (solid)	Listed
21041-95-2	Cadmium Hydroxide	Not Listed
7440-43-9	Cadmium	Listed
7440-48-4	Cobalt	Listed
1310-58-3	Potassium hydroxide	Listed

New Jersey Right to Know:

12054-48-7	Nickel Hydroxide	Listed
7440-02-0	Nickel (solid)	Listed
21041-95-2	Cadmium Hydroxide	Listed
7440-43-9	Cadmium	Listed
21041-93-0	Cobalt Dihydroxide	Listed
7440-48-4	Cobalt	Listed
1310-58-3	Potassium hydroxide	Listed
1310-65-2	Lithium Hydroxide	Listed

New York Right to Know:

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NICKEL CADMIUM BATTERY

12054-48-7	Nickel Hydroxide	Listed
7440-02-0	Nickel (solid)	Listed
21041-95-2	Cadmium Hydroxide	Not Listed
7440-43-9	Cadmium	Listed
7440-48-4	Cobalt	Listed
1310-58-3	Potassium hydroxide	Listed

Pennsylvania Right to Know:

12054-48-7	Nickel Hydroxide	Listed
7440-02-0	Nickel (solid)	Listed
21041-95-2	Cadmium Hydroxide	Listed
7440-43-9	Cadmium	Listed
21041-93-0	Cobalt Dihydroxide	Listed
7440-48-4	Cobalt	Listed
1310-58-3	Potassium hydroxide	Listed
1310-65-2	Lithium Hydroxide	Listed

California Proposition 65:

⚠️WARNING: This product can expose you to chemicals including Nickel Hydroxide, Nickel (solid) and Cobalt which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

⚠️WARNING: This product can expose you to chemicals including Cadmium and Cadmium Compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other information

Abbreviations and Acronyms: None

Disclaimer:

This product has been classified in accordance with OSHA HCS 2012 guidelines. The information provided in this SDS is correct, to the best of our knowledge, based on information available. The information given is designed only as a guidance for safe handling, use, storage, transportation and disposal and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials, unless specified in the text. The responsibility to provide a safe workplace remains with the user.

NFPA: 3-1-2

HMIS: 3-1-2

Initial preparation date: 04.02.2019

End of Safety Data Sheet