



# SAFETY DATA SHEET

## 1. Identification

**Product identifier** Nickel Metal Hydride (NiMH) Batteries

**Other means of identification** None.

### Recommended use of the chemical and restrictions on use

**Recommended use** Nickel metal hydride battery.

**Restrictions on use** Not available.

### Details of manufacturer or importer

**Company name** Motorola Solutions Australia Pty Ltd

**Address**  
10 Wesley Court  
East Burwood VIC 3151  
Australia

**General information** +61 3 9847 7500

### Emergency phone number

**CHEMTREC (Australia):** +61 2 9037 2994

**CHEMTREC (International):** +1-703-741-5500

**Customer number** 204471

## 2. Hazard(s) identification

### Classification of the hazardous chemical

**Physical hazards** Not classified.

**Health hazards** Not classified.

**Environmental hazards** Not classified.

Under normal conditions of processing and use, exposure to the chemical constituents in this product is unlikely. The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

### Label elements, including precautionary statements

**Hazard symbol(s)** None.

**Signal word** None.

**Hazard statement(s)** The mixture does not meet the criteria for classification.

#### Precautionary statement(s)

**Prevention** Handle with care. For safe handling, see Section 7.

**Response** See Sections 4, 6 and 8 for response information.

**Storage** Store as indicated in Section 7.

**Disposal** Dispose of waste and residues in accordance with local authority requirements.

**Other hazards which do not result in classification** In the event of damage resulting in a leak of exposed materials, avoid contact with contents of an open or damaged cell or battery.

**Supplemental information** None.

## 3. Composition/information on ingredients

### Mixture

Identity of chemical ingredients	CAS number and other unique identifiers	Concentration of ingredients %
Positive electrode (Nickel metal, Nickel hydroxide)	7440-02-0, 12054-48-7	10-25
Positive electrode (Cobalt)	7440-48-4	<10
Negative electrode (Metal hydride alloy may contain: Lanthanum, Cerium, Neodymium, Praseodymium)	7439-91-0, 7440-45-1, 7440-00-8, 7440-10-0	5-15

Negative electrode (May contain: Nickel)	7440-02-0	10-30
Negative electrode (May contain: Cobalt)	7440-48-4	<10
Electrolyte (May contain: Potassium Hydroxide, Sodium Hydroxide)	1310-58-3 1310-73-2	10-15
Other components (Nylon, Polypropylene, Steel)	-	10-28

**Composition comments** All concentrations are in percent by weight unless otherwise indicated. Exposure to hazardous ingredients is not anticipated under normal conditions of use.

## 4. First-aid measures

### Description of necessary first aid measures

<b>Inhalation</b>	Exposure to contents of an open or damaged battery: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician or poison control centre immediately.
<b>Skin contact</b>	Exposure to contents of an open or damaged battery: Remove contaminated clothes and rinse skin thoroughly with water for at least 15 minutes. Call a physician or poison control centre immediately. Chemical burns must be treated by a physician.
<b>Eye contact</b>	Exposure to contents of an open or damaged battery: Immediately flush eyes with plenty of water for at least 15 minutes. Provide eyewash station. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control centre immediately.
<b>Ingestion</b>	Exposure to contents of an open or damaged battery: Call a physician or poison control centre immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

**Personal protection for first-aid responders** Use personal protective equipment sufficient to prevent direct skin or eye contact or inhalation of this product. If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Symptoms caused by exposure** Exposure to contents of an open or damaged battery: Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause allergic skin reaction. Difficulty in breathing. Coughing. Prolonged exposure may cause chronic effects.

**Medical attention and special treatment** Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

## 5. Fire-fighting measures

### Extinguishing media

**Suitable extinguishing media** Use fire-extinguishing media appropriate for surrounding materials.

**Unsuitable extinguishing media** Leak from a damaged or opened battery: Do not use water unless flooding amounts are available.

**Specific hazards arising from the chemical** In the event of fire and/or explosion do not breathe fumes. Irritating, corrosive and/or toxic gases or fumes will be released during a fire. Combustion products may include: carbon oxides, metal oxides.

**Special protective equipment and precautions for fire fighters** Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

**Fire fighting equipment/instructions** Fight fire from protected location or safe distance. Keep upwind. Move containers from fire area if you can do so without risk. Avoid discharge into drains, water courses or onto the ground.

**Hazchem Code** None.

**General fire hazards** Under normal use, the battery does not exhibit flammable properties. Exposure to excessive heat may lead to venting or rupture of the sealed battery, exposing the internal components which may be corrosive and toxic.

**Specific methods** Use standard firefighting procedures and consider the hazards of other involved materials.

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel** None under normal use conditions. In the event of damage resulting in a leak or exposed materials, avoid contact with contents of an open or damaged cell or battery. Wear protective clothing as described in section 8 of this safety data sheet.

**For emergency responders** Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

**Environmental precautions** Avoid allowing material from exposed battery to contaminate soil, sanitary sewers, or waterways.

**Methods and materials for containment and cleaning up** Leak from a damaged or opened battery: Contain spillage with sand or earth. Transfer to a container for disposal. For waste disposal, see Section 13 of the SDS.

**Other issues relating to spills and releases** Clean up in accordance with all applicable regulations.

## 7. Handling and storage

**Precautions for safe handling** Do not open, disassemble, crush or burn battery. Protect against physical damage. Do not expose battery to extreme heat or fire. Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire.

**Conditions for safe storage, including any incompatibilities** Keep out of reach of children. Prevent short circuits. Store in original packaging. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Store away from incompatible materials (See Section 10). Do not store at temperatures above 60 °C (140 °F).

## 8. Exposure controls and personal protection

**Control parameters** Follow standard monitoring procedures.

### Occupational exposure limits

#### Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0.05 mg/m <sup>3</sup>	Dust and fume.
Nickel (CAS 7440-02-0)	TWA	0.1 mg/m <sup>3</sup>	
Nickel hydroxide (CAS 12054-48-7)	TWA	0.1 mg/m <sup>3</sup>	
Potassium hydroxide (CAS 1310-58-3)	Ceiling	2 mg/m <sup>3</sup>	
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m <sup>3</sup>	

#### Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0.05 mg/m <sup>3</sup>	Dust and fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m <sup>3</sup>	
Nickel hydroxide (CAS 12054-48-7)	TWA	0.1 mg/m <sup>3</sup>	

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0.02 mg/m <sup>3</sup>	
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m <sup>3</sup>	Inhalable fraction.
Nickel hydroxide (CAS 12054-48-7)	TWA	0.2 mg/m <sup>3</sup>	Inhalable fraction.
Potassium hydroxide (CAS 1310-58-3)	Ceiling	2 mg/m <sup>3</sup>	
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m <sup>3</sup>	

#### UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
Cobalt (CAS 7440-48-4)	TWA	0.1 mg/m <sup>3</sup>
Nickel (CAS 7440-02-0)	TWA	0.5 mg/m <sup>3</sup>
Potassium hydroxide (CAS 1310-58-3)	STEL	2 mg/m <sup>3</sup>
Sodium hydroxide (CAS 1310-73-2)	STEL	2 mg/m <sup>3</sup>

**Biological limit values****Argentina. Biological Exposure Indexes (BEIs) (Decree 351/1979 )**

<b>Components</b>	<b>Value</b>
Cobalt (CAS 7440-48-4)	15 µg/l
<b>Exposure guidelines</b>	Airborne exposures to hazardous substances are not expected when product is used for its intended purpose.
<b>Appropriate engineering controls</b>	General ventilation normally adequate. Leak from a damaged or opened battery: Provide adequate ventilation if fumes or vapours are generated.
<b>Individual protection measures, for example personal protective equipment (PPE)</b>	
<b>Eye/face protection</b>	None under normal conditions. Leak from a damaged or opened battery: Wear approved safety glasses or goggles.
<b>Skin protection</b>	
<b>Hand protection</b>	None under normal conditions. Leak from a damaged or opened battery: Wear protective gloves.
<b>Other</b>	None under normal conditions. Leak from a damaged or opened battery: Wear suitable protective clothing and gloves.
<b>Respiratory protection</b>	None under normal conditions. Leak from a damaged or opened battery: Wear suitable respiratory protection.
<b>Thermal hazards</b>	Not applicable.
<b>Hygiene measures</b>	Do not store food, drink and tobacco near the product. Practice good housekeeping.

## 9. Physical and chemical properties

### Appearance

Physical state	Solid.
Form	Battery.
Colour	Not available.
Odour	Not available.
Odour threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Will burn if involved in a fire.

### Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other physical and chemical parameters	
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

## 10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Product is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.

Conditions to avoid	Contact with incompatible materials. Elevated temperatures. Shocks and physical damage. Do not open, disassemble, crush or burn battery. Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire.
---------------------	---

Incompatible materials	Do not immerse in seawater or other high conductivity liquids.
Hazardous decomposition products	Thermal decomposition or combustion may produce: carbon oxides, metal oxides

## 11. Toxicological information

### Information on possible routes of exposure

Inhalation	Not relevant, due to the form of the product. Exposure to contents of an open or damaged battery: Prolonged inhalation may be harmful.
Skin contact	Not relevant, due to the form of the product. Exposure to contents of an open or damaged battery: Causes severe skin burns. May cause an allergic skin reaction.
Eye contact	Not relevant, due to the form of the product. Exposure to contents of an open or damaged battery: Causes serious eye damage.
Ingestion	Not relevant, due to the form of the product. Exposure to contents of an open or damaged battery: Causes digestive tract burns. Harmful if swallowed.

**Symptoms related to exposure** Exposure not expected under normal use conditions. In the event that cell or battery is damaged, open, or leaking - inhalation, skin contact, and/or eye contact may be considered for routes of exposure. Signs and symptoms may include: Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause allergic skin reaction. Difficulty in breathing. Coughing. Prolonged exposure may cause chronic effects.

**Acute toxicity** Expected to be a low hazard for usual industrial or commercial handling by trained personnel. Exposure to contents of an open or damaged battery: May be harmful if swallowed or inhaled.

Components	Species	Test results
------------	---------	--------------

Nickel hydroxide (CAS 12054-48-7)

**Acute**

**Inhalation**

LC50	Rat	1.2 mg/l, 4 Hours
------	-----	-------------------

**Oral**

LD50	Rat	1540 mg/kg
------	-----	------------

Potassium hydroxide (CAS 1310-58-3)

**Acute**

**Oral**

LD50	Rat	273 mg/kg
------	-----	-----------

**Skin corrosion/irritation** Exposure to contents of an open or damaged battery: Causes severe skin burns.

**Serious eye damage/irritation** Exposure to contents of an open or damaged battery: Causes serious eye damage.

**Respiratory or skin sensitisation**

**ACGIH sensitisation**

HARD METALS CONTAINING COBALT AND TUNGSTEN CARBIDE, THORACIC FRACTION, AS CO (CAS 7440-48-4)	Respiratory sensitisation
--	---------------------------

**Respiratory sensitisation** Exposure to contents of an open or damaged battery: May cause allergy or asthma symptoms or br

**Skin sensitisation** Exposure to contents of an open or damaged battery: May cause an allergic skin reaction.

**Germ cell mutagenicity** Exposure to contents of an open or damaged battery: Contains a suspect mutagen.

**Carcinogenicity** Exposure to contents of an open or damaged battery: May cause cancer.

**ACGIH Carcinogens**

Cobalt (CAS 7440-48-4)	A2 Suspected human carcinogen.
Nickel (CAS 7440-02-0)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Nickel hydroxide (CAS 12054-48-7)	A5 Not suspected as a human carcinogen.
	A1 Confirmed human carcinogen.

**IARC Monographs. Overall Evaluation of Carcinogenicity**

Cobalt (CAS 7440-48-4)	2B Possibly carcinogenic to humans.
Nickel (CAS 7440-02-0)	2B Possibly carcinogenic to humans.

Nickel hydroxide (CAS 12054-48-7)

1 Carcinogenic to humans.

<b>Reproductive toxicity</b>	Exposure to contents of an open or damaged battery: May damage fertility or the unborn child.
<b>Specific target organ toxicity - single exposure</b>	Based on available data, the classification criteria are not met.
<b>Specific target organ toxicity - repeated exposure</b>	Exposure to contents of an open or damaged battery: Causes damage to organs through prolonged or repeated exposure:
<b>Aspiration hazard</b>	Not relevant, due to the form of the product.
<b>Chronic effects</b>	Exposure to contents of an open or damaged battery: Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.
<b>Other information</b>	Exposure to hazardous ingredients is not anticipated under normal conditions of use.

## 12. Ecological information

**Ecotoxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

<b>Components</b>		<b>Species</b>	<b>Test results</b>
Lanthanum (CAS 7439-91-0)			
<b>Aquatic</b>			
<i>Acute</i>			
Other	EC50	Daphnia sp.	43 µg/l, 48 hours
Nickel (CAS 7440-02-0)			
<b>Aquatic</b>			
Crustacea	EC50	Water flea (Daphnia magna)	1 mg/l, 48 hours 1 mg/l, 48 Hours
	LC50	Calanoid copepod (Pseudodiaptomus coronatus)	6.17 - 12.4 mg/l, 72 hours
Potassium hydroxide (CAS 1310-58-3)			
<b>Aquatic</b>			
Fish	LC50	Western mosquitofish (Gambusia affinis)	80 mg/l, 96 Hours
Sodium hydroxide (CAS 1310-73-2)			
<b>Aquatic</b>			
<i>Acute</i>			
Crustacea	EC50	Ceriodaphnia dubia	40.4 mg/l, 48 Hours
<b>Persistence and degradability</b>	No data is available on the degradability of this product.		
<b>Bioaccumulative potential</b>	No data available.		
<b>Mobility in soil</b>	Some components from a leaking battery may be mobile.		
<b>Other adverse effects</b>	None known.		

## 13. Disposal considerations

<b>Disposal methods</b>	Recycle the batteries, as the primary disposal method. Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
<b>Residual waste</b>	Dispose of in accordance with local regulations. This product and its container must be disposed of in a safe manner.
<b>Contaminated packaging</b>	If contaminated by a leaking or damaged battery, empty containers should be taken to an approved waste handling site for recycling or disposal.

## 14. Transport information

<b>ADG</b>	Not regulated as dangerous goods.
<b>RID</b>	Not regulated as dangerous goods.
<b>IATA</b>	Not regulated as dangerous goods.
<b>IMDG</b>	Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

## 15. Regulatory information

### Safety, health and environmental regulations

**National regulations** This Safety Data Sheet was prepared in accordance with Australia Model Code of Practice for the preparation of Safety Data Sheets for Hazardous Chemicals (23/12/2011).

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP): This product is listed in Appendix A (General Exemptions) and hence the Standard does not apply to the substances in the product.

#### Australia National Pollutant Inventory (NPI): Threshold quantity

Cobalt (CAS 7440-48-4) 10 TONNES/YR Threshold Category: 1

Nickel (CAS 7440-02-0) 10 TONNES/YR Threshold Category: 1

Nickel hydroxide (CAS 12054-48-7) 10 TONNES/YR Threshold Category: 1

#### High Volume Industrial Chemicals (HVIC)

Nickel (CAS 7440-02-0) 1000 - 9999 TONNES See the regulation for additional information.

Potassium hydroxide (CAS 1310-58-3) 1000 - 9999 TONNES See the regulation for additional information.

Sodium hydroxide (CAS 1310-73-2) > 1000000 TONNES See the regulation for additional information.

#### Importation of Ozone Depleting Substances (Customs(Prohibited imports) Regulations 1956, Schedule 10)

Not listed.

#### National Pollutant Inventory (NPI) substance reporting list

Nickel (CAS 7440-02-0) 2000 TONNES/YR Threshold Category: 2B

Nickel hydroxide (CAS 12054-48-7) 2000 TONNES/YR Threshold Category: 2B

#### Prohibited Carcinogenic Substances

Not regulated.

#### Prohibited Substances (National Model Regulation for the control of Workplace Hazardous Substances, Schedule 2 NOHSC:1005 (1994) as amended)

Not listed.

#### Restricted Importation of Organochlorine Chemicals (Customs(Prohibited Imports) Regulations 1956, Schedule 9)

Not listed.

#### Restricted Carcinogenic Substances

Not regulated.

### International regulations

#### Stockholm Convention

Not applicable.

#### Rotterdam Convention

Not applicable.

#### Kyoto protocol

Not applicable.

#### Montreal Protocol

Not applicable.

#### Basel Convention

Not applicable.

### International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No



Country(s) or region	Inventory name	On inventory (yes/no)*
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

## 16. Other information

**Issue date** 31-January-2022

**Revision date** -

### Key abbreviations or acronyms used

ADG: Australian Dangerous Goods.  
 ACGIH: American Conference of Governmental Industrial Hygienists.  
 CAS: Chemical Abstracts Service.  
 IARC: International Agency for Research on Cancer.  
 IATA: International Air Transport Association.  
 IBC: Intermediate Bulk Container.  
 IMDG: International Maritime Dangerous Goods.  
 MARPOL: International Convention for the Prevention of Pollution from Ships.  
 OEL: Occupational Exposure Limit.  
 RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.  
 STEL: Short-Term Exposure Limit.  
 TWA: Time Weighted Average.

**References** ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices  
 IARC Monographs. Overall Evaluation of Carcinogenicity  
 ECHA registered substances database  
 Safe Work Australia Hazardous Substances Information System (HSIS)

**Disclaimer** Motorola Solutions, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.