SAFETY DATA SHEET

MOTOROLA SOLUTIONS

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

Inhalation 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.

Skin contact 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.

Eye contact 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.

Ingestion 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/m3	Dust and fume.
Nickel (CAS 7440-02-0)	TWA	0.1 mg/m3	
Nickel hydroxide (CAS 12054-48-7)	TWA	0.1 mg/m3	
Potassium hydroxide (CAS 1310-58-3)	Ceiling	2 mg/m3	
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3	

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/m3	Dust and fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m3	
Nickel hydroxide (CAS 12054-48-7)	TWA	0.1 mg/m3	

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0.02 mg/m3	
Nickel (CAS 7440-02-0)	TWA	1.5 mg/m3	Inhalable fraction.
Nickel hydroxide (CAS 12054-48-7)	TWA	0.2 mg/m3	Inhalable fraction.
Potassium hydroxide (CAS 1310-58-3)	Ceiling	2 mg/m3	
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3	

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
Cobalt (CAS 7440-48-4)	TWA	0.1 mg/m3
Nickel (CAS 7440-02-0)	TWA	0.5 mg/m3
Potassium hydroxide (CAS 1310-58-3)	STEL	2 mg/m3
Sodium hydroxide (CAS 1310-73-2)	STEL	2 mg/m3

Biological limit values

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

Components	Value
Cobalt (CAS 7440-48-4)	15 µg/l

Exposure guidelines Airborne exposures to hazardous substances are not expected when product is used for its intended purpose.

Appropriate engineering controls General ventilation normally adequate. Leak from a damaged or opened battery: Provide adequate ventilation if fumes or vapours are generated.

Individual protection measures, for example personal protective equipment (PPE)

Eye/face protection None under normal conditions. Leak from a damaged or opened battery: Wear approved safety glasses or goggles.

Skin protection

Hand protection None under normal conditions. Leak from a damaged or opened battery: Wear protective gloves.

Other None under normal conditions. Leak from a damaged or opened battery: Wear suitable protective clothing and gloves.

Respiratory protection None under normal conditions. Leak from a damaged or opened battery: Wear suitable respiratory protection.

Thermal hazards Not applicable.

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

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

Components		Species	Test results
Lanthanum (CAS 7439-91-0)			
Aquatic			
Acute			
Other	EC50	Daphnia sp.	43 µg/l, 48 hours
Nickel (CAS 7440-02-0)			
Aquatic			
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)			
Aquatic			
Fish	LC50	Western mosquitofish (Gambusia affinis)	80 mg/l, 96 Hours
Sodium hydroxide (CAS 1310-73-2)			
Aquatic			
Acute			
Crustacea	EC50	Ceriodaphnia dubia	40.4 mg/l, 48 Hours

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	Some components from a leaking battery may be mobile.
Other adverse effects	None known.

13. Disposal considerations

Disposal methods	Recycle the batteries, as the primary disposal method. Collect and reclaim or dispose in sealed containers at licensed waste disposal site.
Residual waste	Dispose of in accordance with local regulations. This product and its container must be disposed of in a safe manner.
Contaminated packaging	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

UN 3496, Batteries, nickel-metal hydride, 9

Motorola Solutions sealed NiMH battery packs are considered to be “dry cell” batteries. When packaged and shipped by Motorola Solutions, Inc., these batteries are not subject to the dangerous goods regulations as they are compliant with the requirements contained in the following special provisions:

1) International Air Transport Association (IATA) and International Civil Aviation Organization (ICAO) Technical Instructions Dangerous Goods Regulations Special Provision A199;

2) International Maritime Dangerous Goods (IMDG) Code Special Provision 963;

a) Cells or batteries packed with or contained in equipment and nickel-metal hydride button cells are not subject to the Code.

b) All other nickel-metal hydride cells or batteries must be securely packed and protected from short circuit and are not subject to other provisions of the Code when loaded in a cargo transport unit in a total quantity of less than 100kg gross mass.

c) When loaded in a cargo transport unit in a total quantity of 100kg gross mass or more, compliance with sections 5.4.1, 5.4.3 and columns 16a and 16b is required.

3) Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) Special Provision 117;

4) Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) – Not Regulated;

5) UN Model Regulations Special Provisions 117;

In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words “not restricted” and the Special Provision number “A199” be provided on the air waybill, when an air waybill is issued.

The requirements for shipping these batteries, in all modes of transportation, are that they be separated from each other to prevent short-circuits and to prevent movement that could lead to short-circuits. Products must also be packed in strong packaging that can withstand the rigors normal to transportation.

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 Deleting 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.

Resricted 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
Japan	Existing Chemicals List (ECL)	No
Korea	New Zealand Inventory	Yes
New Zealand		
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 24-Jun-2025

Revision date 24-Jun-2025

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

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