MATERIAL SAFETY DATA SHEET

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Section I – Product Identification

Product Name:	151400 Rev 2 / 4.8V 2.2AH NIMH Battery
Trade Name:	NIL
Chemical System:	Nickel/Metal Hydride
Nominal Voltage:	4.8V
Designated for Recharge:	■ Yes ☐ No

Section II – Hazardous Ingredients

IMPORTANT NOTE: The battery cell is contained in a hermetically-sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery cell. The battery cell should not be opened or exposed to heat because exposure to the following ingredients contained within could be harmful under some circumstances. The following information is provided for the user's information only.

Chemical Name	Content (approx. wt%)
Nickel	4.9%
Nickel Hydroxide	23.9%
Cobalt Monoxide	2.7%
Teflon (PTFE)	0.4%
Mischmetal Powder	34.3%
Copper	5.4%
Nickel Plated Steel	16.9%
Rubber	0.3%
Nylon	0.6%
Polypropylene	2.0%
KOH+NaOH+LiOH	3.2%
H2O (Water)	5.5%

Section III – Physical Data for Battery

Melting Point (°F) NA	Boiling Point (°F) NA	% Volatile volume NA
Vapor Pressure (mm Hg) NA	Evaporation Rate	Vapor Density (Air=1) NA
Specific Gravity (H2O) NA	Solubility in Water NA	Appearance and Odor No Odor

Section IV – Fire and Explosion Hazard Data

Flash Point: NA Lower Explosive Limit: NA Upper Explosive Limit: NA

Extinguishing Media: Any class of extinguishing medium may be used on the batteries or their packing material.

Special Fire Fighting Procedures: Exposure to temperatures of above 212°F can cause venting of the liquid electrolyte. Internal shorting could also cause venting of the electrolyte. There is potential exposure to iron, nickel, cobalt, rare earth metals (cerium, lanthanum neodymium, and praseodymium), manganese, and aluminum fumes during fire; use self-contained breathing apparatus.

Section V- Health Hazard Data

Threshold Limit Values: See Section II

Effects of a Single (Acute) Overexposure:

Inhalation: During Normal use inhalation is an unlikely route of exposure due to containment of hazardous materials within the battery case. However, should the batteries be exposed to extreme heat or pressure causing breach in the battery cell case, exposure to the constituents may occur.

Ingestion: If the battery case is breached in the digestive tract, the electrolyte may cause localized burns.

Skin Absorption: No evidence of adverse effects from available data.

Skin Contact: Exposure to the electrolyte contained inside the battery may result in chemical burns. Exposure to nickel may cause dermatitis in some sensitive individuals.

Eye Contact: Exposure to the electrolyte contained inside the battery may result in severe irritation and chemical burns.

Carcinogenicity:

Nickel has been identified by the National Toxicology Program (NTP) as reasonably anticipated to be a carcinogen. Cobalt has been identified by IARC as a 2B carcinogen.

Other Effects of Repeated (Chronic) Exposure:

Chronic overexposure to nickel may result in cancer; dermal contact may result in dermatitis in sensitive individuals.

Medical Conditions Aggravated by Overexposure:

A knowledge of the available toxicology information and of the physical and chemical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.

Emergency and First Aid Procedures:

Swallowing: Do not induce vomiting. Seek medical attention immediately.

Skin: If the internal cell material of an opened battery cell comes into contact with the skin, immediately flush with water for at least 15 minutes.

Inhalation: If potential for exposure to fumes or dusts occurs, remove immediately to fresh air and seek medical attention.

Eyes: If the contents from an opened battery come into contact with the eyes, immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention.

Section VI – Reactivity Data

The batteries are stable under normal operating conditions.

Hazardous polymerization will not occur.

Hazardous decomposition products: oxides of nickel, cobalt, manganese, lanthanum, and cerium.

Conditions to avoid: heat, open flames, sparks, and moisture.

Potential incompatibilities (i.e., material to avoid contact with): The battery cells are encased in a non-reactive container; however, if the container is breached, avoid contact of internal battery components with acids, aldehydes, and carbonate compounds.

Section VII – Spill and Leak Procedures

Spill and leaks are unlikely because cells are contained in a hermetically-sealed case. If the battery case is breached, don protective clothing that is impervious to caustic materials and absorb or pack spill residues in inert material. Dispose in accordance with applicable state

and federal regulations.

Section VIII – Safe Handling and Use (Personal Protective Equipment)

Ventilation Requirements:	Not required under normal use.
Respiratory Protection:	Not required under normal use.
Eye Protection:	Not required under normal use.
Gloves:	Not required under normal use.

Section IX – Precautions for Safe Handling and Use

Storage: Store in a cool place, but prevent condensation on cell or battery terminals. Elevated temperatures may result in reduced battery life. Optimum storage temperatures are between -31°F and 95°F.

Mechanical containment: If there are special encapsulation or sealing requirements, consult Axiss Technology Corp. about possible cell hazard precautions or limitations.

Handling: Accidental short circuit will bring high temperature elevation to the battery as well as shorten the battery life. Be sure to avoid prolonged short circuit since the heat can burn attendant skin and even rupture of the battery cell case. Batteries packaged in bulk containers should not be shaken. Metal covered tables or belts used for assembly of batteries into devices can be the source of short circuits; apply insulating material to assembly work surface.
If soldering or welding to the case of the battery is required, consult Axiss Technology Corp. for proper precautions to prevent seal damage or external short circuit.

Charging: This battery is designed for recharging. A loss of voltage and capacity of batteries due to self-discharge during prolonged storage is unavoidable. Charge battery before use. Observe the specified charge rate since higher rates can cause a rise in internal gas pressure, which may result in damaging heat generation or cell rupture and/or venting.

Labeling: If normal label warning is not visible, it is important to provide a device label stating:

CAUTION: Do not dispose in fire, mix with other battery types, charge above specified rate, connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents.

Section X- Recycling and Disposal

Axiss encourages battery recycling. Our Nickel Metal Hydride batteries are not defined by the government as hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials.

DO NOT INCINERATE or subject battery cells to temperatures in excess of 212°F. Such treatment can cause cell rupture.

Section XI – Transportation

Axiss Sealed Nickel Metal Hydride batteries are considered to be “dry cell” batteries and are not subject to dangerous goods regulation for the purpose of transportation by the U.S. Department of Transportation, the International Civil Aviation Administration, the international Air Transport Association (IATA DGR A199-2016) or the International Maritime Dangerous Goods regulations (IMDG). The only DOT requirements for shopping Nickel Metal Hydride batteries in Special Provision 130 which states: “Batteries, dry are not subject to the requirements of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals).” Our batteries also comply with IMDG SP304, which states “Batteries, dry, containing corrosive electrolyte which will not flow out of the battery if the battery case is cracked are not subject to the provisions of this Code provided the batteries are securely packed and protected against short-circuits. Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries which are non-dangerous goods. Such batteries have been packed in inner packaging in such a manner as to effectively prevent short circuit and movement that could lead to short circuit. IATA requires that batteries being transported by air must be protected from short-circuiting and protect from movement that could lead to short-circuiting.