Material Safety Data Sheet

Section 1. PRODUCT AND COMPANY IDENTIFICATION			
Product Description		Lithium-Ion Rechargeable Battery Pack	
Product Identification		Part Number: 2440-0030-100 Nominal Voltage: 3.2V Nominal Capacity: 4Ah Nominal Energy: 12.8Wh Nominal Weight: 0.2lbs. (0.09kg)	
Manufacturer Name	Nova Battery Systems (NBS)	**Emergency Contact**:	ChemTrec: 1-800-424-9300 (US) 1-703-527-3887 (International)
Manufacturer Address	136 School Street Bergenfield, New Jersey 07621	**Technical Contact**	1-201-244-3010
Issue Date		February 2017	
Revision Date		24 January 2019	

Section 2. HAZARDS IDENTIFICATION	
Hazard Classification	This NBS battery pack meets the definition of an article. Under the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), "Articles" as defined in the Hazard Communication Standard (29 CRF 1910:1200) of the Occupational Safety and Health Administration of the United States of America, or by similar definition, are outside the scope of the system. [Rev. 2 (2007) Part 1.3.2.1.1]
Caution Statements	• Do not open or disassemble or short circuit cell terminals • Do not expose to fire or open flame • Do not puncture, crush, immerse, deform, force discharge, incinerate, or heat above 85°C (194°F)
Routes of Entry	• **Inhalation**: Not anticipated. Respiratory and eye irritation may occur if fumes are released due to excessive heat or many leaking battery cells. • **Skin**: Yes • **Ingestion**: Yes
Symptoms	Skin and eye irritation may occur following exposure to a leaking battery.
Medical Conditions	An acute exposure will not generally aggravate any existing medical condition.
Potential Health Effects	The rechargeable lithium-ion batteries described in this Safety Data Sheet are sealed units which are not hazardous when manufacturer recommendations are followed. The chemicals they contain are inside a can. Risk of exposure occurs only in the case of mechanical, thermal or electrical abuse. Activation of safety venting and/or the rupture of the battery container may cause chemical leakage. Contact of electrolyte with skin or eyes should be avoided.

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	%	CAS Number
Nickel compound	0-25	1313-99-1
Manganese compound	0-15	1313-13-9
Cobalt compound	4-50	1307-96-6
Styrene-Butadiene-Rubber	<1	27288-99-9
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Aluminum Foil	2-10	7429-90-5
Copper Foil	2-10	7440-50-8
Carbon	10-30	7440-44-0
Electrolyte (Ethylene carbonate)	10-20	96-49-1
Lithium hexafluorophosphate	<5	21324-40-3
Stainless steel, Nickel and inert materials	Remainder	N/A

Section 4. FIRST AID MEASURES

Inhalation	• Avoid inhaling any vented gases. • In case of exposure, remove to fresh air immediately; consult a physician immediately. • If breathing is difficult, seek emergency medical attention.
Skin contact	• Exposure to materials from a ruptured cell may cause skin irritation. • In case of exposure, flush skin thoroughly with water for at least 15 minutes; consult a physician immediately. • Remove contaminated clothing and wash before reuse. • In severe cases seek emergency medical attention.
Eye contact	• Exposure to materials from a ruptured cell may cause eye irritation. • Irrigate thoroughly with water for at least 15 minutes; consult a physician immediately.
Ingestion	• In case of ingestion, wash out mouth thoroughly with water for at least 15 minutes; consult a physician immediately. • Consult a physician or local poison control center immediately.

Section 5. FIRE FIGHTING MEASURES

Extinguishing media	• Carbon Dioxide (CO_2), halon, appropriate foam are the most effective. • Water or water-based foam may be used to cool down burning Li-Ion cells and batteries.
Special Fire-Fighting Procedures	• Full fire-fighting protective clothing should be worn, including a positive-pressure self-contained breathing apparatus SCBA if cells or batteries are involved in a fire. • Detailed information on fighting Lithium-Ion battery fires can be found in Guide 147 (Lithium Ion Batteries) of the US DOT Emergency Response Guide.
Unusual Fire and Explosion Hazard	• Cells or batteries that are damaged, opened or exposed to excessive heat/fire may flame or leak potentially hazardous/toxic organic vapors/fumes. • Non-ruptured cells may explode if exposed to extreme heat, especially from nearby abused or failed cells.

Section 6. ACCIDENTAL RELEASE MEASURES	
Ventilation	• None under normal operation conditions. • Avoid inhalation of any vapors that may be emitted. Remove all personnel from area until fumes dissipate. • Use a positive-pressure self-contained breathing apparatus (SCBA) if cells or batteries are involved in a fire.
Skin Protection	• None under normal operation conditions. • Butyl gloves should be used to handle battery components in the event that a battery or cell releases its contents.
Eye Contact	• None under normal operating conditions. • Safety glasses should be worn when handling a leaking battery.
Storage	• Sand or earth can be used to absorb any exuded material in the event of a leaking battery. • Damaged batteries that are not hot or burning, along with contaminated absorbent material, should be sealed in a plastic bag and disposed as special waste in accordance with local regulations.

Section 7. HANDLING AND STORAGE	
Safe Handling	• Use only approved chargers and follow manufacturer recommendations for charging. Follow manufacturer recommendations regarding maximum voltage, current, and temperature. • Do not disassemble or bypass internal safety devices. • Do not crush or pierce. • Do not directly heat or solder. Do not throw or dispose of in fire. • Short-circuited battery packs have resettable fuses.
Storage	• Do not mix batteries of different types and brands. • Do not mix new and used batteries. • Keep batteries in non-conductive (i.e. plastic) trays. • Store in a cool (preferably below 30°C) and ventilated area, away from moisture, sources of heat, open flames, food and drink. Temperatures above 70°C may result in battery leakage and rupture. • Do not place near heating equipment, nor expose to direct sunlight for long periods of time. • Keep adequate clearance between walls and batteries. • Do not store batteries in a manner that may cause short-circuit.

Section 8. EXPOSURE CONTROLS/ PERSONAL PROTECTION	
Steps if Material is Released	• Notify safety personnel immediately. • Evacuate the area and allow vapors to dissipate. • Avoid eye or skin contact. • DO NOT inhale vapors. • Cleanup personnel should wear appropriate PPE. • Contain spilled chemicals with proper absorbent material and remove. • Burned cells/batteries and fire cleanup should be disposed as hazardous waste. Undamaged cells/batteries are not hazardous. • Always consult/follow international, federal, and local environmental regulations.
Personal Protective Equipment	• PPE for damaged batteries should include chemical resistant gloves for hand protection and safety glasses for eye protection. • A chemical apron may be worn for severely leaking batteries. • In the event of a fire, SCBA should be worn for respiratory protection, along with thermally protective outer garments.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES
This section is not applicable to cells and batteries

Section 10. STABILITY AND REACTIVITY	
Stability	Product is stable under conditions described in Section 7.
Conditions to avoid	• Prolonged overcharging • Overheating. • Storage above 70°C is not recommended. • Crush, disassembly, short circuit.
Hazardous Decomposition Products	• Thermal degradation may produce hazardous fumes. • Oxides of Carbon and Sulfur. • Other toxic materials
Reactivity	• Damaged, non-discharged batteries may contain elemental Lithium. Elemental Lithium is water reactive. Reaction with water produces heat and hydrogen gas.

Section 11. TOXICOLOGICAL INFORMATION	
Signs & symptoms	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes can be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
Inhalation	Leaked materials/electrolyte can be a lung irritant.
Skin contact	Leaked materials/electrolyte can be a skin irritant.
Eye contact	Leaked materials/electrolyte can be an eye irritant.
Ingestion	Tissue damage to throat and gastro-respiratory tract if swallowed.

Section 12. ECOLOGICAL INFORMATION
This section is not applicable to cells and batteries. No impact expected under normal use.

Section 13. DISPOSAL CONSIDERATIONS
• It is recommended that the cells and batteries be completely discharged prior to disposal., • The terminals must be taped or capped to prevent short circuiting. • DO NOT dispose in fire. • Always dispose of in accordance with local, state and federal regulations. • Recycling is encouraged over disposal when possible.

Section 14. TRANSPORT INFORMATION

Canadian Transportation of Dangerous Goods Regulations: These batteries have passed the tests listed in the United Nations Manual of Tests and Criteria, Part 38.3. Not regulated for transport under Special Provision 34 of the Canadian Transport of Dangerous Goods Regulations.

United States Hazardous Materials Regulations (49 CFR): These batteries have passed the tests listed in the United Nations Manual of Tests and Criteria, Part 38.3. Not regulated for transport under Special Provision 188 of the United States Code of Federal Regulations Title 49.

International Air Transport Association (IATA): These batteries have passed the tests listed in the United Nations Manual of Tests and Criteria, Part 38.3. These cells must be packaged in accordance with Packaging Instruction 965, Section II.

International Maritime Organization (IMO): These cells have passed the tests listed in the United Nations Manual of Tests and Criteria, Part 38.3. Not regulated for transport under Special Provision 188 of the International Maritime Dangerous Goods Code (IMDG).

Miscellaneous:

1. The battery pack can be shipped in three ways: Batteries alone, batteries packed with equipment, or batteries contained in equipment.
2. The weight is 0.09kg for each battery.
3. The rating of the battery is 12.8 Watt-hour.

Section 15. REGULATORY INFORMATION

Batteries are considered articles and are thus exempt from TCSA regulation. In Europe, REACH, RoHS, and WEEE directives apply.

Section 16. OTHER INFORMATION

The information contained in this Material Safety Data Sheet represents the best and most current information available at the time of preparation. However this information is provided without warranty of any kind. It is the responsibility of the user to decide what measures must be taken to provide for the safe and proper use and disposal of this product.