SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Li-ion Polymer Battery P925167

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use LITHIUM ION BATTERIES

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name Firstar Battery Co., Limited

Supplier Address Building 2, Fuzhong Industrial Park, Fuyong Town, Shenzhen,

Guangdong, 518103

China

Supplier Phone Number Phone:+860755-33919852

Fax: +860755-33919852

Contact Phone+860755-33919852

Supplier Email zjj@better-id.com

Emergency telephone number

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200) This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1
Acute toxicity(Oral)	Category 4
Acute Inhalation(Gases)	Category 4
Acute Inhalation(Dusts/Mists)	Category 4

GHS Label elements, including precautionary statements

Emergency Overview

Danger

Signal word

Hazard Statements

Cause skin irritation Harmful in contact with skin Harmful if swallowed Harmful inhaled

Causes serious eye irritation

May cause an allergic skin reaction

May cause cancer



This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold. Intended use of the product should not result in exposure to the chemical substance.

This is a battery. In case of rupture: the above hazards exist.

Appearance Silver

Physical State Solid

Odor Odorless

Precautionary Statements - Prevention

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Use personal protective equipment as required

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Wear protective gloves

Do not breathe dust/fume/gas/mist/vapors/spray

Wear eye/face protection

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Specific treatment (see supplemental first aid instructions on this label)

Eves

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

If eye irritation persists: Get medical advice/attention

Skin

IF ON SKIN: Wash with plenty of soap and water Take off contaminated clothing and wash before reuse If skin irritation or rash occurs: Get medical advice/attention

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity

Other information

Very toxic to aquatic life with long lasting effects

Interactions with Other Chemicals

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Weight %	
Cobalt lithium manganese nickel oxide	182442-95-1	40.8	
Graphite	7782-42-5	21.6	
Ethylene carbonate	96-49-1	15.27	
Copper	7440-50-8	10.57	
Aluminum	7429-90-5	5.95	
Polyethylene	9002-88-4	2.68	
Carbon black	1333-86-4	0.73	
1,1-Difluoroethylene polymer	24937-79-9	0.5	
Styrene-Butadiene polymer	9003-55-8	0.52	
Polypropylene	9003-07-0	0.49	
Sodium carboxymethyl cellulose	9004-32-4	0.39	
Nylon-6	25038-54-4	0.35	
Nickel	7440-02-0	0.15	

4. FIRST AID MEASURES

First aid measures

General Advice First aid is upon rupture of sealed battery. Show this safety data sheet to

the doctor in attendance

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least

15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation

develops and persists. Do not rub affected area

Skin Contact Wash off immediately with soap and plenty of water for at least 15

minutes. In the case of skin irritation or allergic reactions see a physician.

May cause an allergic skin reaction.

Inhalation Remove to fresh air. If symptoms persist, call a physician. Get medical

attention immediately if symptoms occur.

Ingestion Do NOT induce vomiting. Rinse mouth immediately and drink plenty of

water. Never give anything by mouth to an unconscious person. Call a

physician.

Self-protection of the first

aider

Avoid contact with skin, eyes or clothing. Use personal protective

equipment as required. Wear personal protective clothing (see section 8)

Most important symptoms and effects, both acute and delayed

Most Important Symptoms

and Effects

Coughing and/ or wheezing. Itching.

Indication of any immediate medical attention and special treatment needed

Notes to Physician May cause sensitization of susceptible persons. Treat symptomatically

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient

Specific Hazards Arising from the Chemical

Product is or contains a sensitizer. May cause sensitization by skin contact.

Uniform Fire Code Irritant: Solid

Hazardous Combustion Products

Carbon Oxides

Explosion Data

Sensitivity to Mechanical Impact No. Sensitivity to Static Discharge No.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use

personal. protective equipment as required. Evacuate personnel to safe

areas

Other Information Refer to protective measures listed in Sections 7 and 8

Environmental Precautions

Environmental Precautions Refer to protective measures listed in Sections 7 and 8.

Methods for cleaning up Pick up and transfer to properly labeled containers

Methods for ContainmentPrevent further leakage or spillage if safe to do so.Methods for cleaning upPick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling In case of rupture. Use personal protection equipment. Avoid contact with

skin, eyes or clothing.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible Products Strong acids. Strong oxidizing agents. Strong bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m ³		
Graphite 7782-42-5	TWA: 2 mg/m³ respirable fraction all forms except graphite fibers	TWA: 15 mg/m³ total dust synthetic TWA: 5 mg/m³ respirable fraction synthetic (vacated) TWA: 2.5 mg/m³ respirable dust natural (vacated) TWA: 10 mg/m³ total dust synthetic (vacated) TWA: 5 mg/m³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ respirable dust
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³
Copper 7440-50-8	TWA: 0.2 mg/m³ fume TWA: 1 mg/ mg/m³ Cu dust and mist	TWA: 0.1 mg/m³ fume TWA: 1 mg/m³ dust and mist (vacated) TWA: 0.1 mg/m³ Cu dust, fume, mist	IDLH: 100 mg/m³ dust, fume and mist TWA: 1 mg/m³ dust and mist TWA: 0.1 mg/m³ fume
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable fraction	TWA: 15 mg/m³ total dust TWA: 5 mg/m³ respirable fraction (vacated) TWA: 15 mg/m³ total dust (vacated) TWA: 5 mg/m³ respirable fraction (vacated) TWA: 5 mg/m³ Al Aluminum	TWA: 10 mg/m ³ ₃ total dust TWA: 5 mg/m ³ respirable dust
Carbon black 1333-86-4	TWA: 3 mg/m ³ inhalable fraction	TWA: 3.5 mg/m³ (vacated) TWA: 3.5 mg/m³	IDLH: 1750 mg/m ³ TWA: 3.5 mg/m ³ TWA: 0.1 mg/m ³ Carbon black in presence of Polycyclic aromatic hydrocarbons PAH

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL:

Occupational Safety and Health

Administration - Permissible Exposure Limits NIOSH IDLH Immediately Dangerous to Life or Health

Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v.

OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15 for national

exposure control parameters

Appropriate engineering controls

Engineering Measures Showers

Eyewash stations Ventilation systems

Individual protection measures, such as personal protective equipment

goggles). None required for consumer use.

Skin and Body Protection Wear protective gloves and protective clothing. Long sleeved clothing.

Impervious gloves

Respiratory ProtectionNo protective equipment is needed under normal use conditions. If

exposure limits are exceeded or irritation is experienced, ventilation and

evacuation may be required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical StateSolidAppearanceSilverOdorOdorlessColorNo information availableOdor ThresholdNo information available

Property Values Remarks/ Method рΗ No data available None known Melting / freezing point No data available None known Boiling point / boiling range No data available None known **Flash Point** No data available None known **Evaporation Rate** No data available None known Flammability (solid, gas) No data available None known Flammability Limit in Air **Upper flammability limit** No data available Lower flammability limit No data available Vapor pressure No data available None known Vapor density No data available None known **Specific Gravity** No data available None known **Water Solubility** No data available None known Solubility in other solvents No data available None known Partition coefficient: n-octanol/water 0.00001 None known **Autoignition temperature** No data available None known **Decomposition temperature** No data available None known Kinematic viscosity No data available None known **Dynamic viscosity** 0.00001 None known **Explosive properties** No data available **Oxidizing Properties** No data available

Other Information

Softening PointNo data availableVOC Content (%)No data availableParticle SizeNo data available

Particle Size Distribution

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

None known based on information supplied.

Incompatible materials

Strong acids. Strong oxidizing agents. Strong bases.

Hazardous Decomposition Products

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information Product does not present an acute toxicity hazard based on known or

supplied information In case of rupture

Inhalation Specific test data for the substance or mixture is not available.

Corrosive by inhalation. (based on components).

Eye Contact Specific test data for the substance or mixture is not available.

Expected to be and irritant based on components. Irritating to eyes. May cause redness, itching, and pain. May cause temporary eye

irritation.

Skin Contact Specific test data for the substance or mixture is not available.

Expected to be an irritant based on components. Irritating to skin.

Prolonged contact may cause redness and irritation.

Ingestion Specific test data for the substance or mixture is not available.

Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May

be harmful if swallowed. (based on components).

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Graphite	> 10000 mg/kg (Rat)	-	-
7782-42-5			
Nickel	> 9000 mg/kg (Rat)	-	-
7440-02-0			
Carbon black	> 15400 mg/kg (Rat)	> 3 g/kg (Rabbit)	-
1333-86-4			

Information on toxicological effects

Symptoms Erythema (skin redness). May cause redness and tearing of the eyes.

Itching.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization May cause sensitization of susceptible persons. May cause

sensitization by skin contact. May cause sensitization by inhalation.

Mutagenic Effects No information available

Carcinogenicity The table below indicates whether each agency has listed any

ingredient as a carcinogen

Chemical Name	ACGIH	IARC	NTP	OSHA
Nickel 7440-02-0		Group 2B Group 1	Reasonably Anticipated	Х
Cobalt lithium manganese nickel oxide 182442-95-1	A3	Group 1 Group 2B	Known	Х
Carbon black 1333-86-4	A3	Group 2B		Х

ACGIH (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

Group 2B - Possibly Carcinogenic to Humans

NTP (National Toxicology Program)

Known - Known Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X- Present

Reproductive Toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure Causes damage to organs through prolonged or repeated

exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR1910.1200), this product has been determined to cause systemic target organ toxicity from

chronic or repeated exposure. (STOT RE).

Chronic Toxicity No known effect based on information supplied. Contains a known

or suspected carcinogen. Possible risk of irreversible effects. Avoid repeated exposure. Prolonged exposure may cause chronic effects. Repeated or prolonged skin contact may cause skin irritation and/or

dermatitis and sensitization of susceptible persons.

Target Organ Effects Respiratory system. Eyes. Skin. Gastrointestinal tract (GI).

Aspiration Hazard No information available.

Numerical measures of toxicity Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) ATEmix (dermal)

ATEmix (inhalation-dust/mist)

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Chemical	Toxicity to Algae	Toxicity to Fish	Toxicity to	Daphnia Magna (Water
Name			Microorganisms	Magna (Water Flea)
Nickel 7440-02-0	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)		48h EC50: > 100 mg/L 48h EC50: = 1 mg/L
Copper 7440-50-8	96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata) 72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata)	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: = 0.112 mg/L (Poecilia reticulata) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas)		48h EC50: = 0.03 mg/L
Carbon black 1333-86-4		, , , , , , , , , , , , , , , , , , , ,		24h EC50: > 5600 mg/L

Persistence and Degradability

No information available.

Bioaccumulation

No information available

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal methods Should not be released into the environment.

Contaminated Packaging Dispose of in accordance with federal, state and local regulations.

US EPA Waste Number D007

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Nickel	(hazardous	Included in waste		
7440-02-0	constituent - no	streams:		
	waste number)	F006, F039		

California Hazardous Waste Codes 141

Chemical Name	California Hazardous Waste
Cobalt lithium manganese nickel oxide	Toxic
182442-95-1	
Nickel	Toxic powder
7440-02-0	Ignitable powder
Aluminum	Ignitable powder
7429-90-5	
Copper	Toxic
7440-50-8	

14. TRANSPORT INFORMATION

Note:

The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule) Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code"

DOT Proper Shipping NameNOT REGULATED
NON REGULATED

Hazard Class N/A

TDGNot regulatedMEXNot regulatedICAONot regulatedIATANot regulatedProper Shipping NameNot regulated

Hazard Class N/A

<u>IMDG/IMO</u> Not regulated

Proper Shipping Name NON-REGULATED PER SP 188

Hazard Class N/A
EmS No. F-A, S-I
RID Not regulated
ADR Not regulated
AND Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA Complies

DSL All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and

Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Nickel	7440-02-0	0.15	0.1
Cobalt lithium manganese	182442-95-1	40.8	1.0
nickel oxide			0.1
Aluminum	7429-90-5	5.95	1.0
Copper	7440-50-8	10.57	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard No
Chronic Health Hazard No
Fire Hazard No
Sudden release of pressure hazard No
Reactive Hazard No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Nickel		X	X	
7440-02-0				
Copper		X	X	
7440-50-8				
Cobalt lithium manganese		X		
nickel oxide				
182442-95-1				

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances	Extremely Hazardous	RQ
	RQs	Substances RQs	
Nickel	100 lb		RQ 100 lb final RQ
7440-02-0			RQ 45.4 kg final RQ
Copper	5000 lb		RQ 5000 lb final RQ
7440-50-8			RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

This product contains the following i reposition so chemicals:		
Chemical Name	California Proposition 65	
Nickel - 7440-02-0	Carcinogen	
Carbon black - 1333-86-4	Carcinogen	

Cobalt lithium manganese nickel oxide - 182442-95-1	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Lithium nickel cobalt manganese oxide 182442-95-1	Х		Х	X	X
Graphite 7782-42-5	X	X	X		
Ethylene carbonate 96-49-1		Х	Х		
Nickel 7440-02-0	X	X	X	X	Х
Copper 7440-50-8	X	X	X	X	X
Aluminum 7429-90-5	X	X	X	X	
Carbon black 1333-86-4	Х	X	Х		X

International Regulations

Mexico

National occupational exposure limits

Component	Carcinogen Status	Exposure Limits
Cobalt lithium manganese nickel oxide 182442-95-1(40.8)	_	Mexico: TWA 0.2 mg/m ³
Graphite 7782-42-5(21.6%)		Mexico: TWA= 2 mg/m ³
Nickel 7440-02-0(0.15%)		Mexico: TWA 1 mg/m ³
Copper 7440-50-8(10.57%)		Mexico: TWA= 1 mg/m³ Mexico: TWA= 0.2 mg/m³ Mexico: STEL= 2 mg/m³
Aluminum 7429-90-5(5.95%)		Mexico: TWA= 10 mg/m ³
Carbon black 1333-86-4(0.73%)		Mexico: TWA 3.5 mg/m³ Mexico: STEL 7 mg/m³

Mexico - Occupational Exposure Limits - Carcinogens

Canada

WHMIS Hazard Class

Not determined

16. OTHER INFORMATION

NFPA Health Hazards 1 Flammability 0 Instability 0 Physical and Chemical Hazards - HMIS Health Hazards 3 * Flammability 0 Physical Hazard 0 Personal Protection

Chronic Hazard Star Legend * = Chronic Health Hazard

Prepared By Firstar Battery Co.,Limited

Issuing Date

Revision Date 17-Aug-2015

Revision Note No information available

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release 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 or in any process, unless specified in the text

End of Safety Data Sheet