SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA Hazard Communication Standard (29 CFR 1910.1200) and Canada WHMIS 2015 which includes the amended Hazardous Products Act (HPA) and the Hazardous Products Regulation (HPR)

Issuing Date 28-Jan-2021 **Revision Date** 28-Jan-2021 **Revision Number** 1

1. Identification

Product identifier

Product Name Li-ion battery pack FX0121 24V 5.0AH 120Wh

Other means of identification

Product Code(s) FX0121

UN/ID no UN3480

Synonyms Lithium-ion Battery Pack

Recommended use of the chemical and restrictions on use

Recommended use Battery

Restrictions on use Do not short circuit or expose to temperatures higher than the maximum temperature rating specified by the manufacturer. Do not recharge, over charge or crush any cell or pack. Ensure cells and batteries are safely handled and stored. Review Section 7 completely before use.

Details of the supplier of the safety data sheet

Initial supplier identifier
Chervon Canada Inc.
1-3480 Laid Road
Mississauga, Ontario L5L 5Y4
Canada
Phone: 1-866-624-3786

Supplier Address
Chervon North America
769 Seward Ave NW Suite 102
Grand Rapids, MI 49504
Phone: +1-847-571-8373

Manufacturer Address
Nanjing Chervon Industry Co., Ltd.
159 South Jiang Jun Rd. Jiangning
Economic & Technical Development Zone
Nanjing, Jiangsu 211106 P.R. China
Phone: +862552101133

E-mail daversano@na.chervongroup.com; hj.ye@cn.chervongroup.com

Emergency telephone number

Emergency telephone +1-847-571-8373

2. Hazard(s) identification

Classification

This product is an article as defined by the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200) and Canada WHMIS 2015, which includes the amended Hazardous Products Act (HPA). No exposure to hazardous chemicals is expected to occur during intended product use. Misuse of the product may result in exposure to hazards.

Label elements

Hazard statements
Not classified.

Other information
No information available.

3. Composition/information on ingredients

Substance

Not applicable.

Mixture

Synonyms Lithium-ion Battery Pack

Chemical name	CAS No	Weight-%	Hazardous Material Information Review Act registry number (HMIRA registry #)	Date HMIRA filed and date exemption granted (if applicable)
Lithium cobalt nickel oxide	113066-89-0	36	-	-
Copper	7440-50-8	24	-	-
Graphite	7782-42-5	12	-	-
Dimethyl carbonate	616-38-6	6	-	-
Aluminum	7429-90-5	5	-	-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	2	-	-
Ethylene carbonate	96-49-1	1	-	-

4. First-aid measures

Description of first aid measures

General advice First aid is upon rupture of sealed battery.

Inhalation IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician.

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Skin contact 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.

Ingestion IF SWALLOWED: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.

Indication of any immediate medical attention and special treatment needed

Note to physicians 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 Use of water spray when fighting a lithium fire may be inefficient. However, copious amounts of water may be used to cool a battery fire and extinguish any surrounding combustible fires.

Specific hazards arising from the chemical Thermal decomposition can lead to release of toxic and corrosive gases/vapors.

Explosion data
Sensitivity to mechanical impact None.
Sensitivity to static discharge None.

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

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. Wash thoroughly after handling.

Other information Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up During a release, ensure the Personal Protection listed in Section 8 is worn. Neutralize any electrolyte contaminated surfaces with baking soda, soda lime or sodium bicarbonate. Transfer damaged battery and any clean up materials to a sealed container a neutralizing material as stated above. Ensure the container is properly labeled.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Do not breathe dust. Use personal protection equipment. Do not crush, pierce, short circuit (+) and (-) battery terminals with conductive (metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non-conductive (plastic) trays. Cells or batteries that have been dropped or experience mechanical shock should be isolated and monitored for approximately 5 days to identify a possible internal short circuit and resulting fire. Jewelry, and all metal, should be removed before handling batteries to avoid short circuit.

Conditions for safe storage, including any incompatibilities

Storage Conditions Store at room temperature. Do not store near combustible materials. Protect from moisture. Elevated temperature (>60◦C) can shorten battery life. Do not store in high humidity environments. Never stack heavy objects on top of battery boxes. Keep batteries in original packaging until use and do not expose them to unnecessary or excessive handling.

8. Exposure controls/personal protection

Control parameters

Exposure Limits The following ingredients are the only ingredients of the product above the cut-off level (or level that contributes to the hazard classification of the mixture) which have an exposure

limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure limits from the sources listed here.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Lithium cobalt nickel oxide 113066-89-0	TWA: 0.02 mg/m³ Co inhalable particulate matter TWA: 0.2 mg/m³ Ni inhalable particulate matter	TWA: 1 mg/m³ Ni (vacated) TWA: 1 mg/m³ Ni	IDLH: 10 mg/m³ Ni TWA: 0.015 mg/m³ except Nickel carbonyl Ni
Copper 7440-50-8	TWA: 0.2 mg/m³ fume	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
Graphite 7782-42-5	TWA: 2 mg/m³ respirable particulate matter 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/m³ TWA: 2.5 mg/m³ natural respirable dust
Aluminum 7429-90-5	TWA: 1 mg/m³ respirable particulate matter	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	TWA: 10 mg/m³ total dust TWA: 5 mg/m³ respirable dust
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m³ F	TWA: 2.5 mg/m³ F (vacated) TWA: 2.5 mg/m³	IDLH: 250 mg/m³ F

Chemical name	Alberta	British Columbia	Ontario	Quebec
Lithium cobalt nickel oxide 113066-89-0	TWA: 0.2 mg/m³ TWA: 0.02 mg/m³	TWA: 0.02 mg/m³ TWA: 0.05 mg/m³ Dermal Sensitizer, Respiratory Sensitizer	TWA: 0.2 mg/m³ TWA: 0.02 mg/m³	TWA: 0.2 mg/m³ TWA: 0.02 mg/m³
Copper 7440-50-8	TWA: 0.2 mg/m³ TWA: 1 mg/m³	TWA: 1 mg/m³ TWA: 0.2 mg/m³	TWA: 0.2 mg/m³ TWA: 1 mg/m³	TWA: 0.2 mg/m³ TWA: 1 mg/m³
Graphite 7782-42-5	TWA: 2 mg/m³	TWA: 2 mg/m³	TWA: 2 mg/m³	TWA: 2 mg/m³
Aluminum 7429-90-5	TWA: 10 mg/m³	TWA: 1.0 mg/m³	TWA: 1 mg/m³	TWA: 10 mg/m³
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m³	TWA: 2.5 mg/m³	TWA: 2.5 mg/m³	TWA: 2.5 mg/m³

Biological occupational exposure limits

Chemical name	ACGIH
Lithium cobalt nickel oxide 113066-89-0	15 µg/L - urine (Cobalt) - end of shift at end of workweek
Phosphate(1-), hexafluoro-, lithium 21324-40-3	2 mg/L - urine (Fluoride) - prior to shift 3 mg/L - urine (Fluoride) - end of shift

Appropriate engineering controls

Engineering controls Showers
Eyewash stations

Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection	None required for normal handling of the finished product. If necessary to handle damaged product where exposure to the electrolyte is a possibility, chemical splash goggles and a face shield are recommended.
Hand protection	None required for normal handling of the finished product. If necessary to handle damaged product where exposure to the electrolyte is a possibility, chemically resistant gloves are recommended.
Skin and body protection	None required for normal handling of the finished product. If necessary to handle damaged product where exposure to the electrolyte is a possibility, a chemically resistant apron is recommended.
Respiratory protection	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance	
Physical state	Solid
Color	No information available
Odor	Odorless
Odor threshold	No information available

Property	**Values**	**Remarks • Method**
pH	No data available	None known
Melting point / freezing point	No data available	None known
Initial boiling point and boiling range	No data available	None known
Flash point	No data available	None known
Evaporation rate	No data available	None known
Flammability	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	No data available	None known
Water solubility	No data available	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	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	No data available	None known

Other information

Explosive properties	No information available.
Oxidizing properties	No information available.
Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Liquid Density	No information available

Bulk density No information available

10. Stability and reactivity

Reactivity None under normal use conditions.

Chemical stability Stable under normal conditions.

Possibility of hazardous reactions None under normal use conditions.

Conditions to avoid Heat, flames and sparks.

Incompatible materials Under normal use, batteries are not incompatible. The electrolyte is incompatible with: Strong oxidizing agents.

Hazardous decomposition products Thermal decomposition can lead to release of toxic/corrosive gases and vapors.

11. Toxicological information

Information on likely routes of exposure

Product Information Exposure is not expected for product under normal conditions of use. In the event of an exposure to electrolyte the following toxicological information is provided:

Inhalation Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract. Harmful by inhalation. (based on components).

Eye contact Specific test data for the substance or mixture is not available. Severely irritating to eyes. Causes serious eye damage. May cause burns. May cause irreversible damage to eyes. (based on components).

Skin contact Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. (based on components).

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Burning. Coughing and/ or wheezing. Difficulty in breathing.

Acute toxicity

Numerical measures of toxicity

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

ATEmix (oral) 80,137.00 mg/kg

ATEmix (inhalation-dust/mist) 0.05 mg/l

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Graphite	-	-	> 2000 mg/m³ (Rat) 4 h
Dimethyl carbonate	= 13 g/kg (Rat)	> 5 g/kg (Rabbit)	= 140 mg/L (Rat) 4 h
Ethylene carbonate	= 10 g/kg (Rat)	-	> 730 mg/m³ (Rat) 8 h

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

Skin corrosion/irritation Irritating to skin.

Serious eye damage/eye irritation Causes burns. Risk of serious damage to eyes.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Based on available data, the classification criteria are not met.

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium cobalt nickel oxide 113066-89-0	A1 A3	Group 2B Group 1	Reasonably Anticipated Known	X

Legend

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
Reasonably Anticipated - Reasonably Anticipated to be a Human 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 No information available.

Aspiration hazard No information available.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects. Avoid release to the environment.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Copper 7440-50-8	EC50: 0.0426 - 0.0535mg/L (72h, Pseudokirchneriella subcapitata) EC50: 0.031 - 0.054mg/L (96h, Pseudokirchneriella subcapitata)	LC50: 0.0068 - 0.0156mg/L (96h, Pimephales promelas) LC50: <0.3mg/L (96h, Pimephales promelas) LC50: =0.2mg/L (96h, Pimephales promelas) LC50: =0.052mg/L (96h, Oncorhynchus mykiss) LC50: =1.25mg/L (96h, Lepomis macrochirus) LC50: =0.3mg/L (96h, Cyprinus carpio) LC50: =0.8mg/L (96h, Cyprinus carpio) LC50: =0.112mg/L (96h, Poecilia reticulata)	-	EC50: =0.03mg/L (48h, Daphnia magna)
Graphite 7782-42-5	-	LC50: >100mg/L (96h, Danio rerio)	-	-
Dimethyl carbonate	-	LC50: >=100mg/L (96h,	-	-

616-38-6		Danio rerio)		
Ethylene carbonate 96-49-1	-	LC50: >100mg/L (96h, Oncorhynchus mykiss)	-	-

Persistence and degradability No information available.

Bioaccumulation No information available.

Mobility in soil No information available.

Other adverse effects No information available.

13. Disposal considerations

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations, Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

Chemical name	California Hazardous Waste Status
Lithium cobalt nickel oxide 113066-89-0	Toxic
Aluminum 7429-90-5	Ignitable powder

14. Transport information

Note: Intended for All lithium batteries:
Lithium cells and batteries must successfully pass the tests defined in “UN Manual of Tests and Criteria”, Section 38.3 and may require they be manufactured under a Quality Management Program. Lithium Metal and Lithium Ion cells and batteries, when shipped by themselves (not in or with equipment) are forbidden as cargo on passenger aircraft and must be marked as “Cargo Air Only” if shipped by air (they must be marked “Cargo Air Only” for all modes of DOT transport). Lithium Ion cells and batteries, when shipped by themselves (not in or with equipment) by air must be shipped at or below 30% full charge. Note: Some regulations require a summary of test results and/or a copy of the Quality Management Programs be made available for Lithium cells and batteries

DOT

UN/ID no	UN3480
Proper shipping name	LITHIUM ION BATTERIES
Transport hazard class(es)	9
Reportable Quantity (RQ)	(Copper: RQ (kg)= 2270.00) Copper: RQ (lb)= 5000.00
DOT reportable quantity kg (calculated)	Copper: RQ (kg)= 9458.00
DOT Reportable Quantity lbs. (calculated)	Copper: RQ (lb)= 20833.00
Special Provisions	422, A51, A54
DOT Marine Pollutant	PP
Marine pollutant	Copper
Description	UN3480, LITHIUM ION BATTERIES(Copper), 9, Marine pollutant
Emergency Response Guide Number	147

TDG

UN/ID no	UN3480
Proper shipping name	LITHIUM ION BATTERIES
Transport hazard class(es)	9
Special Provisions	34, 123, 137, 138, 149, 159
Description	UN3480, LITHIUM ION BATTERIES, 9

IATA

UN number or ID number	UN3480
UN proper shipping name	Lithium ion batteries
Transport hazard class(es)	9
Subsidiary hazard class	A
Packing group	
ERG Code	9F
Special Provisions	A88, A99, A154, A164, A183, A201, A206, A213 A331, A334, A802
Description	UN3480, Lithium ion batteries, 9 (A)

IMDG

UN number or ID number	UN3480
UN proper shipping name	LITHIUM ION BATTERIES
Transport hazard class(es)	9
Packing group	
EmS-No	F-A, S-I
Special Provisions	188, 230,310, 348, 376, 377, 384, 387
Marine pollutant	P
Description	UN3480, LITHIUM ION BATTERIES(Copper), 9, Marine pollutant

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status.
DSL/NDSL	Contact supplier for inventory compliance status.

Legend:
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	SARA 313 - Threshold Values %
Lithium cobalt nickel oxide - 113066-89-0	0.1
Copper - 7440-50-8	1.0
Aluminum - 7429-90-5	1.0

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate

classifications.

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
Lithium cobalt nickel oxide 113066-89-0	-	X	-	-
Copper 7440-50-8	-	X	X	-

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 RQs	Extremely Hazardous Substances RQs	Reportable Quantity (RQ)
Copper 7440-50-8	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals:

Chemical name	California Proposition 65
Lithium cobalt nickel oxide - 113066-89-0	Carcinogen

U.S. State Right-to-Know Regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Lithium cobalt nickel oxide 113066-89-0	X	-	X
Copper 7440-50-8	X	X	X
Graphite 7782-42-5	X	X	X
Dimethyl carbonate 616-38-6	X	X	X
Aluminum 7429-90-5	X	X	X
Phosphate(1-), hexafluoro-, lithium 21324-40-3	X	-	-
Ethylene carbonate 96-49-1	-	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA	**Health hazards** 1	**Flammability** 0	**Instability** 0	**Special hazards** -
HMIS	**Health hazards** 1	**Flammability** 0	**Physical hazards** 0	**Personal protection** X

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation

Key literature references and sources for data used to compile the SDS

U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
World Health Organization

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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