SDS
Safety Data Sheets Report

Name of Sample :	**Revelation Rechargeable Li-ion Battery**
Model/Type :	**PN 722127-1**
Applicant :	**SafeWorks LLC** **365 Upland Drive Seattle, WA 98188 USA**
Manufacturer :	**Shenzhen Unit Pack Power Technology Co.,Ltd** **4/F BuildingA Baiyang Industial park No.44 KengWei Road,Shangwu Community Shiyan Street Bao'an Shenzhen, China**
Report No. :	**JLA22BS0212R**
Date(s) of Report:	**2022.02.23 - 2022.03.03**

Approved by: Forlan Lu **Written by:** Marin Wang

JLA TESTING LABORATORY APPROVED

SAFETY DATA SHEET

According to OSHA GHS 《A Guide to The Globally Harmonized System of Classification and Labelling of Chemicals 》,IATA DGR 《Dangerous Goods Regulations 》,IMO IMDG CODE 《INTERNATIONAL MARITIME Dangerous Goods CODE》

Section 1. Identification

Product Identifier

Product name: Revelation Rechargeable Li-ion Battery

Model: PN 722127-1 (48V 40000mAh 1920Wh)

Mass: 33.5lb(15.2Kg)

Other means of identification

Synonyms: none.

Recommended use of the chemical and restrictions on use

Recommended Use: Used in Energy Storage Fields.

Uses advised against

a) Do not dismantle, open or shred secondary cells or batteries.

b) Do not expose cells or batteries to heat or fire. Avoid storage in direct sunlight.

c) Do not short-circuit a cell or a battery. Do not store cells or batteries haphazardly in a box or drawer. where they may short-circuit each other or be short-circuited by other metal objects.

d) Do not remove a cell or battery from its original packaging until required for use.

e) Do not subject cells or batteries to mechanical shock.

f) In the event of a cell leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.

g) Do not use any charger other than that specifically provided for use with the equipment.

h) Observe the plus (+) and minus (–) marks on the cell, battery and equipment and ensure correct use.

i) Do not use any cell or battery which is not designed for use with the equipment.

j) Do not mix cells from different manufacturers, capacity, size or type within a pack.

k) Battery usage by children should be supervised.

l) Seek medical advice immediately if a cell or a battery has been swallowed.

m) Always purchase the battery recommended by the device manufacturer for the equipment.

n) Keep cells and batteries clean and dry.

o) Wipe the cell or battery terminals with a clean dry cloth if they become dirty.

p) Secondary cells and batteries need to be charged before use. Always use the correct charger and refer to the manufacturer’s instructions or equipment manual for proper charging instructions.

q) Do not leave a battery on prolonged charge when not in use.

r) After extended periods of storage, it may be necessary to charge and discharge the cells or batteries several times to obtain maximum performance.

s) Retain the original product literature for future reference.

t) Use only the cell or battery in the application for which it was intended.
u) When possible, remove the battery from the equipment when not in use.
v) Dispose of properly.

Details of the Manufacturer of the safety data sheet

Name: SafeWorks,LLC

Address: 365 Upland Drive,Seattle,WA 98188 USA

Telephone number of the supplier: +1 855-457-8513

Fax: /

E-mail address: ProductSupport@SpiderStaging.com

Emergency telephone number

Company Emergency Phone Number: +1 855-457-8513

Section 2. Hazard(s) identification

Classification

No harm during normal use. In case of electrolyte egress, reference as follows:

Classification of the substance or mixture

Classification according to GHS

Acute Toxicity, Oral(Hazard category 4)

Acute Toxicity, Dermal(Hazard category 3)

Skin, irritate(Hazard Category 1B)

Eye Irritate (Hazard category 1)

GHS Label elements, including precautionary statements

GHS02

GHS05

GHS06

Signal word: Warning

Hazard statement(s):

H242: Heating may cause a fire.

H311: Toxic in contact with skin.

H314: Causes severe skin burns and eye damage.

H302: Harmful if swallowed.

H319: Causes serious eye irritation.

H351: Suspected of causing cancer.

H317: May cause an allergic skin reaction.

Precautionary statements

Prevention:

P264: Wash thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P261: Avoid breathing dust/fume/gas/mist/vapours /spray.
P272: Contaminated work clothing should not be allowed out of the workplace.
Response:
P312: Call a Poison center or doctor/physician if you feel unwell.
P302+P350: If on skin: Gently wash with plenty of soap and water.
P301+P330+P331: If swallowed : rise mouth. Do not induce vomiting.
P305+P351+P338: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P308+P313: If exposed or concerned: Get medical advice/attention.
P302+P352: If on skin: Wash with plenty of water.
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.
P321: Specific treatment(see....on this label).
P362+P364: Take off contaminated clothing and wash it before reuse.
Storage:
P405: Store locked up.
Disposal:
P501: Dispose of contents/container in accordance with local/national regulations.
Hazards not otherwise classified (HNOC):
Not Applicable.
Other information:
No information available.

Section 3. Composition/Information on Ingredients

Chemical characterization: Mixtures.
Description:
Product: Consisting of the following components.

Chemical Name	Concentration%	CAS No.	EC No.
Lithium nickel-cobalt manganate	45.0	182442-95-1	235-362-0
Graphite(C)	23.5	7782-42-5	231-955-3
Poly Vnylidene Fluoride(PVDF)	0.6	24937-79-9	--
Aluminum(Al)	5.6	7429-90-5	231-072-3
Copper(Cu)	10.4	7440-50-8	231-159-6
Lithium hexafluorophosphate ($LiPF_6$)	11.9	21324-40-3	244-334-7
Polyethylene ($(C_2H_4)_n$)	3.0	9002-88-4	200-815-3

Note: CAS number is Chemical Abstract Service Registry Number.
N/A=Not apply.

Section 4. First-Aid Measures

First aid measures

Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin Contact: Remove contaminated clothing and shoes. Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

Inhalation: Move to fresh air. If symptoms persist, call a physician.

Ingestion: Do not induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Swallowing: Do not induce vomiting. Get medical attention.

Most Important Symptoms/Effects No information available.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically

Section 5. Fire-Fighting Measures

Suitable Extinguishing Media

CO2, dry chemical powder, water spray.

Unsuitable Extinguishing Media: No information available.

Specific Hazards Arising from the Chemical

Formation of toxic gases is possible during heating or in case of fire.

In case of fire, the following can be released:

Carbon monoxide(CO).

Carbon dioxide.

Other irritating and toxic gases.

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.

For example: Wear self-contained respiratory protective device. Wear suitable protective clothing eye/face protection.

Special hazards arising from the substance or mixture:

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Lithium ion batteries contain flammable electrolyte that may vent, ignite and produce sparks when subjected to high temperature(>150℃), When damaged or abused(e.g. mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in clothes proximity.

Section 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Avoid contact with eyes.

Refer to section 8 for personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

Evacuate personnel to safe areas.

Environmental precautions

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

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

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: Use personal protective equipment. Dam up. Cover liquid spill with sand, earth or other Non combustible absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

Section 7. Handling and Storage

Precautions for safe handling

Handling: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.

Wash thoroughly after handling. Use this material with adequate ventilation.

The product is not explosive.

Conditions for safe storage, including any incompatibilities

If the Lithium-ion Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Lithium-ion Battery periodically.

3 months: -10℃~+40℃, 45 to 70%RH

And recommended at -5℃~+35℃ for long period storage.

Batteries should be stored in greenhouses and recharged to 50 to 70 percent capacity. For long-term storage, charge and discharge once every three months to prevent over-discharge of the battery.

The voltage for a long time storage shall be 3.7V~3.9V range.

Do not storage Lithium-ion Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

Keep out of reach of children.

Do not expose Lithium-ion Battery to heat or fire. Avoid storage in direct sunlight.

Do not store together with oxidizing and acidic materials.

Keep ignition sources away- Do not smoke.

Store in cool, dry and well-ventilated place.

Incompatible Products

None known.

Section 8. Exposure Controls/Personal Protection

Control parameters

Ingredients with limit values that require monitoring at the workplace:	
12190-79-3 Lithium Cobalt Dioxide	
TLV (USA)	N/A
MAK (Germany)	N/A

Other Exposure Guidelines

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962(11th Cir., 1992).

Appropriate engineering controls

Engineering Measures: Showers
Eyewash stations
Ventilation systems

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Ensure adequate ventilation.

Individual protection measures, such as personal protective equipment

Eye/Face Protection:


Tightly sealed goggles.

Body protection:

Protective work clothing.

Skin protection:


Protective gloves.

Material of gloves:

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material:

The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.

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.

Hygiene Measures:

Handle in accordance with good industrial hygiene and safety practice.

Section 9. Physical and Chemical Properties

Physical State	Form: Prismatic.
	Odor: Odorless.
	Odor Threshold: No information available.
Change in condition:	
pH, with indication of the concentration:	Not determined.
Melting point/freezing point:	Not determined.
Initial boiling point and Boiling range:	Not determined.
Flash Point:	Not determined.
Evaporation rate:	Not determined.
Flammability (solid, gas):	Not determined.
Upper/lower flammability or explosive limits:	Not determined.
Vapor Pressure:	Not determined.
Vapor Density:	Not determined.
relative density:	Not determined.
Solubility in Water:	Not determined.
Solubility in other solvents:	Not determined.
n-octanol/water partition coefficient:	Not determined.
Auto-ignition temperature:	Product is not self-igniting.
Decomposition temperature:	Not determined.
Odout threshold:	Not determined.
Evaporation rate:	Not determined.
Viscosity:	Not determined.
Other Information:	No further relevant information available.

Section 10. Stability and Reactivity

Reactivity: Stable under recommended storage and handling conditions (see section 7, Handling and storage).

Chemical stability: Stable under normal conditions of use, storage and transport.

Thermal decomposition/conditions to be avoided: No decomposition if used according to specifications.

Possibility of Hazardous Reactions: None under normal processing.

Hazardous Polymerization: Hazardous polymerization does not occur.

Conditions to avoid: Strong heating, fire, Incompatible materials.

Incompatible materials: Strong oxidizing agents. Strong acids. Base metals.
Hazardous Decomposition Products: Carbon oxides, Other irritating and toxic gases.

Section 11. Toxicological Information

Acute toxicity: No data available.

LD/LC50 values relevant for classification:
Not available.

Skin corrosion/irritation: No irritant effect.
Serious eye damage/irritation: Cause serious eye irritation.
Respiratory or skin sensitization: No sensitizing effects known.
Specific target organ system toxicity: No information available.
CMR effects(carcinogenetic, mutagenicity and toxicity for reproduction): No information available.

Section 12. Ecological Information

Toxicity:

Aquatic toxicity:
No further relevant information available.

Persistence and degradability: No further relevant information is available.
Bioaccumulative potential: No further relevant information is available.
Mobility in soil: No further relevant information is available.
Results of PBT and vPvB assessment.
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No information available.

Section 13. Disposal Considerations

Safe handling and methods of disposal

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.
Product disposal recommendation: Observe local, state and federal laws and regulations.
Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't disassemble the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations. The potential effects on the environment and human health of the substances used in batteries and accumulators;
The desirability of not disposing of waste batteries and accumulators as unsorted municipal waste

and of participating in their separate collection so as to facilitate treatment and recycling.

Section 14. Transport Information

According to PACKING INSTRUCTION 965 ~ 967 of IATA DGR 63rd Edition for transportation, the special provision 188 of IMDG (inc Amdt 40-20). The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrate and tighten closed before transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles. Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship should be cleaned and sterilized before transport. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the batteries should be kept away from the bedrooms and kitchens and isolated from the engine room, power, and fire sources.Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in the residential area and congested area.

UN number

3480&3481

UN Proper shipping name

LITHIUM ION BATTERIES (including lithium ion polymer batteries) or; LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)

Transport hazard class(es)

Class 9

Packing Instruction (if applicable)

965 II/ IB, 966 II, 967 II

Marine pollutant (Yes/No)

No

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)

No information available.

Special precautions

No information available.

Section 15. Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

_____ Hazardous **__V__ Non-hazardous**

Section 16. Other Information

Preparation and revision information

Date of previous revision: Not applicable.

Revision summary: The first New SDS.

Abbreviations and acronyms

TSCA: Toxic Substances Control Act, The American chemical inventory.
DSL: Domestic Substances List
EINECS: European Inventory of Existing Commercial chemical Substances
ENCS: Japanese Existing and New Chemical Substances
ECL: Existing Chemicals List, the Korean chemical inventory
IECSC: Inventory of existing chemical substances in China.

Disclaimer

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. The information in this SDS provides all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have received professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

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