



Zhuhai CosMX Power Jinwan Subsidiary Co., Ltd.

Workshop No.1, No.2, No.3 and No.5, No.3 Qingwansanlu Road,
Qingwan Industry Park, Sanzao Town, Jinwan District, Zhuhai City,
Guangdong Province, P.R.China.
Tel:86-756-6199908 Fax:86-756-6199910 <http://www.cosmx.com.cn>

MATERIAL SAFETY DATA SHEET

Ref No:ARC 20210101-205

PRODUCT NAME: Rechargeable Li-ion Polymer Battery

Volts: 3.87V

TRADE NAME: N/A

CHEMICAL SYSTEM: Lithium Ion

Designed for Recharge: yes

PRODUCT MODEL: **HB532629EFW**

Nominal Capacity: 451mAh

SECTION 1-MANUFACTURE INFORMATION

Manufactured By:

Telephone Number for Information

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[Fax:86-756-6199910](tel:86-756-6199910)

Zip Code:519180

Prepared Date:23/12/2021



SECTION 2 -MATERIAL COMPOSITION AND COMPOSITION INFORMATION

IMPORTANT NOTE:The battery should not be opened or burned.Exposure to the ingredients contained within or their combustion products could be harmful.

产品主要成分	CAS NO.	wt%
Lithium cobaltate 钴酸锂	12190-79-3	30~50
Graphite 石墨	7782-42-5	15~30
Aluminium 铝	7429-90-5	5~10
Copper 铜	7440-50-8	5~10
Carbon Black 炭黑	1333-86-4	0~2
Carboxymethyl cellulose 羧甲基纤维素	9004-32-4	0~1



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POLY (PROPYLENE-CO-ETHYLENE) 1-丙烯与乙烯的聚合物	9010-79-1	0.3~1.5
Polyvinylidene fluoride 聚偏氟乙烯树脂	24937-79-9	0~2
Benzene, ethenyl-, polymer with 1,3-butadiene 聚苯乙烯丁二烯共聚物	9003-55-8	0~1.5
Aluminum oxide (Al ₂ O ₃) (9CI) 氧化铝	11092-32-3	0~1.5
polyethylene 聚乙烯	9002-88-4	0~1
Nickel 镍	7440-02-0	0.1~2
4-Fluoro-1,3-dioxolan-2-one 氟代碳酸乙烯酯	114435-02-8	0~5
Ethylene carbonate 碳酸乙烯酯	96-49-1	0~10
Diethyl carbonate 碳酸二乙酯	105-58-8	0~10
Propylene carbonate 碳酸丙烯酯	108-32-7	0~10
Lithium hexafluorophosphate 六氟磷酸锂	21324-40-3	0~5
1,3-Propanesultone 1,3-丙烷磺内酯	1120-71-4	0~0.5
Epoxy resin 环氧树脂	25085-99-8	0~0.1
Acrylate monomer 丙烯酸酯单体	28961-43-5	0~0.1
acrylic acid 丙烯酸	9003-01-4	0~0.2
glass fiber cloth 玻璃纤维布	65997-17-3	0~3
poly(ethylene terephthalate) 聚酯切片	25038-59-9	0~0.2
Tin 锡	7440-31-5	0~0.1
Titanium dioxide 二氧化钛	13463-67-7	0~0.1



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SECTION 3-INDEPENDENT CERTIFICATION OF LITHIUM-LON CELL TRANSPORTATION MODEL REGULATION .

There are being tested in accordance with the UN Model Regulation, Manual of Test and Criteria, Part III, subsection 38.3.

T1	Altitude Simulation	No mass loss, leakage, venting, disassembly, rupture, and fire, OCV should not be less than 90% before testing	Passed	
T2	Thermal Test	No mass loss, leakage, venting, disassembly, rupture, and fire, OCV should not be less than 90% before testing	Passed	
T3	Vibration	No mass loss, leakage, venting, disassembly, rupture, and fire, OCV should not be less than 90% before testing	Passed	
T4	Shock	No mass loss, leakage, venting, disassembly, rupture, and fire, OCV should not be less than 90% before testing	Passed	
T5	External Short circuit	External temperature should not exceed 170 degree, No disassembly, rupture, and fire within six hours of this test	Passed	
T6	Impact	External temperature should not exceed 170 degree, No disassembly and fire within six hours of this test	Passed	
T7	Overcharge	No disassembly and fire within seven days of this test	Passed	Battery only
T8	Forced Discharge	No disassembly and fire within seven days of this test	Passed	Cell only

The lithium battery should pass the UN38.3 test, if the battery can not pass the testing, it can not transport, should redesign. If the battery through the test, for the lithium battery only, follow the UN3480 and the packing requirements for PI965, for the lithium battery which installed in equipment, follow the UN3481 and the packing requirements for PI967.

SECTION 4-HAZARDS IDENTIFICATION

4.1 Classification

This product is an article which is a sealed battery and as such does not require an SDS per the OSHA hazard communication standards unless ruptured. The hazards indicated are for a ruptured battery

Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4
Skin corrosion/irritation	Category 1 Sub-category C
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 2



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Specific target organ toxicity (repeated exposure)	Category 1
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4.2 Label elements

4.2.1 Singal word Danger

4.2.2 Hazard Statements

Harmful if swallowed

Toxic if swallowed

Harmful in contact with skin

Cause severe skin burns and eye damage

May cause an allergic or reaction

May cause cancer

Cause damage to organs

May cause respiratory irritation

4.2.3 Symbol



This product is an article which contains a chemical substance. Safety information is given for exposure to the article as solid. 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.

4.3 Precautionary Statements

4.3.1 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.

Contaminated work clothing should not be allowed out of the workplace.

Keep away from flames and hot surface -no smoking.

Do not breath dust/fume/gas/mist/vapors/spray.

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

Wear protective gloves



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4.3.2 Precautionary Statements - Response

If exposed or connected: Get medical advice/attention. Specific treatment(see supplemental first aid/instruction on this label).

Skin

If on skin: wash with plenty of soap and water. Take off contaminated clothing and water before reuse, if skin irritation or rash occurs: get medical advice/attention if feel unwell.

Eye

If in eyes: Rinse cautiously with water for several minutes, remove contact lenses, if present and easy to do, Continue rinsing. Call a poison center or doctor/physician.

Inhalation

If inhalation: if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a poison center or doctor/physician.

Ingestion

If swallowed: rinse mouth, do not induce vomiting ,Call a poison center or doctor/physician if feel unwell.

4.3.3 Precautionary Statements - Storage

Store locked up

4.3.4 Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant.

4.4 Hazards not otherwise classified (HNOC)

Not applicable

4.5 Other information

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic

4.6 Interactions with other chemicals

Use of alcoholic beverages may enhance toxic effect.

Since electrolyte is flammable liquid, it does not bring close to fire. It may cause moderate to severe eye irritation, dryness of the skin. Breathing of its mist, vapor or fume may irritate nose, throat and lungs. Exposure of electrolyte material in the area which contains water may generate hydrofluoric acid, which can cause immediate burns on skin, severe eye burn. The ingestion of electrolyte can cause serious chemical burns of mouth, esophagus and gastrointestinal tract.

SECTION 5-FIRST-AID MEASURES

Eyes: Flush with water for at least 15 minutes. If irritation occurs and persists, contact a medical doctor.

Skin: Remove contaminated clothing and thoroughly wash with soap and plenty of water. If irritation persists, contact a medical doctor.

Inhalation: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor IMMEDIATELY.



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SECTION 6-FIRE-FIGHTING MEASURE

Hazardous Combustion Products: When burned, hazardous products of combustion including fumes of carbon monoxide, carbon dioxide, and fluorine can occur.

Extinguishing Media: Water, carbon dioxide, dry chemical, or foam.

Basic Fire Fighting Procedures: Wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual Fire & Explosion Hazards: This material does not represent an unusual fire or explosion hazard.

Flammability point: 100°C (CC) (100°F) .

Autoignition Temperature: No Data.

Flammability Limits in Air, Lower, % by Volume: 1.4.

Flammability Limits in air, Upper, % by Volume: 11.

SECTION 7-ACCIDENTAL RELEASE MEASURES

Procedure for Release and Spill: Sweep up and place in a suitable container, dispose or waste according to all local, state and Federal Laws and Regulations.

Before cleanup measures begin, review the entire MSDS with particular attention potential Health Effects; and on Recommended Personal Protective Equipment.

SECTION 8-HANDLING AND STORAGE

Handling Specific safe handling advice: Never throw out cells in a fire or expose to high temperatures. Do not soak cells in water and seawater. Do not expose to strong oxidizers. Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform. Do not connect the positive terminal to the negative terminal with electrically conductive material.

Storage conditions (suitable, to be avoided): Do not place the battery cell near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in shortened battery cell life and degrade performance.

Store in cool place (temperature: -20-45°C, humidity: 45-75%).

Incompatible products: conductive materials, water, seawater, strong oxidizers and strong acids.

Packing material (recommended, not suitable): Insulative and tearproof materials are recommended.

SECTION 9-EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: Investigate engineering techniques to reduce exposures use with adequate ventilation and recommended personal protective equipment.

Eye/Face protection: Use good industrial practice to avoid eye contact. Processing of this product releases vapors or fumes which may cause eye irritation. Where eye contact may be likely wear chemical goggles and have eye flushing equipment available.

Skin protection: Minimize skin contamination by following good industrial hygiene practices. Wearing protective gloves is recommended. Wash hands and contaminated skin thoroughly after handling.

Respiratory protection: Avoid breathing dust and processing vapors. When adequate ventilation is not available, wear a

NIOSH/MSHA respirator approved for protection against inorganic dusts.

Special clothing: Robber gloves.



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SECTION 10-HYSICA DATE

Physical state: Solid
Form:Geometric color (without outer PVC COVER)
Odor : No odor
pH:Not Applicable
Flash point: Not Applicable
Density: Not Applicable
Solubility: Not Soluble.

SECTION 11-STABILITY AND REACTIVITY

Hazardous reactions may occur under some specific conditions.

Conditions to avoid: When a battery cell is exposed to an external short-circuit, crushes, modification, high temperature above 100 degree C, it will be the cause of heat generation and ignition. Avoid to be exposed to direct sunlight and high humidity.

Materials to avoid: Conductive materials, water, seawater, strong oxidizers and strong acids.

Hazardous decomposition products: Acid or harmful gas is emitted during fire.

SECTION 12-TOXICOLOGICAL INFORMATION

Eco toxicological Information: No information available.

Local Environmental Effects: Unknown.

Since some internal materials remain in the environment, do not bury or throw out into the environment.

SECTION 13-DISPOSAL INFORMATION

Waste disposal must be in accordance with the applicable regulations. Disposal of the lithium ion battery cells should be performed by permitted, professional disposal Page:

firms knowledgeable in State or Local requirements of hazardous waste treatment and hazardous waste transportation. Incineration should never be performed by battery but users, eventually by trained professional in authorized facility with proper gas and fume treatment.

SECTION 14-TRANSPORTATION/SHIPPING INFORMATION

1. US DOT, ALL CosMX batteries are not subject to the requirements of the Department of Transportation (DOT) subchapter C, Hazardous Material Regulations since each CosMX battery meets the exceptions under 173.185(b). The CosMX batteries are exempted from the US DOT regulations as long as they are separated to prevent short circuits and packed in strong packing for conditions normally encountered in transportation.

2. ICAO and IATA, The lithium battery should according with the International Air Transport Association (IATA) DGR 63rd edition) requirements for transportation. The battery or cell should be packed and signed as following table (If the package according with PI-965 section II or section IB / PI-966 section II / PI-967

UN NO.	Proper Shipping Name	Power	Package requirements	Label which need to paste
UN3480	Lithium Ion Batteries (limited to a maximum of 30% SoC)	Cell≤20Wh Battery≤100Wh	PI965 section II	lithium battery handling label Cargo Aircraft Only label
		Cell≤20Wh Battery≤100Wh	PI965 section IB	Class 9 hazard label lithium battery handling label Cargo Aircraft Only label
		Cell>20Wh Battery>100Wh	PI965 section IA	Class 9 hazard label Cargo Aircraft Only label
UN3481	Lithium Ion Batteries Contained in Equipment	Cell≤20Wh Battery≤100Wh	PI967 section II	lithium battery handling label
		Cell>20Wh Battery>100Wh	PI967 section I	Class 9 hazard label



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UN3481	Lithium Ion Batteries Packed With Equipment	Cell≤20Wh Battery≤100Wh	PI966 section II	lithium battery handling label
		Cell>20Wh Battery>100Wh	PI966 section I	Class 9 hazard label

Do not damage or mishandle this package. If package is damaged, batteries must be quarantined, inspected, and repacked. Cells and batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport. Waste lithium batteries and lithium batteries being shipped for recycling or disposal are prohibited from air transport unless approved by the appropriate national authority of the State of origin and the State of the operator.

3. The lithium battery shall be complied with the special provision 188 of IMDG CODE (Amdt. 39-18) and lithium battery packaging specification P903.

4. The lithium battery shall be complied with the requirement in Special Provisions "188" and "230".

5. BUILDING OF NEW BATTERY PACK—if you build any of Cosmx lithium batteries into battery pack, you must assure that they are being tested in accordance with the UN Model Regulation, Manual of Test and Criteria, Part III, subsection 38.3.

6. The lithium battery shall be complied with the special provision 188 of JT/T 617-2018.

The consignment should be fully described by proper shipping name and packed, marked and in proper condition for carriage by air. The consignment is not classified as dangerous under the current edition of the IATA 63rd edition Effective 01-January-2022. Dangerous goods regulation and all applicable carrier and government regulations.

SECTION 15-REGULATORY INFORMATION

1. The transportation of the lithium batteries is regulated by nations "Model Regulations on Transport of Dangerous Goods".

2. Lithium batteries and cells are subjected to shipping requirements exceptions under 49 CFR 173.185.

3. Shipping of lithium batteries in aircrafts are regulated by the international civil aviation organization (ICAO) and the international air transport association (IATA) requirements in special provision UN3480 PI965, UN3481 PI966 or PI967.

4. Shipping of lithium batteries on sea are regulated the international maritime dangerous goods (IMDG) requirements of UN3480.

5. Cobalt compounds supposed hazardous and are subjected to reporting requirements of section 313 of title 1:1 of the suspended are amendments and reauthorization act of 1986 (SARA) and 40 CFR part 372.

SECTION 16-OTHER INFORMATION

The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. DBK makes no warranty expressed or implied with respect to lithium content content information is available from DBK on request.

Remark: The batteries have passed UN38.3 authentication and are safe for transportation, and it is advised to use dry power powder fire extinguisher in case of explosion or inflammation