THREOD
SYSTEMS

MATERIAL SAFETY DATA SHEET

Document Number: 114-204-114963-01-11

SECTION 1: Product And Company Identification

PRODUCT NAME:	LITHIUM-POLYMER Battery 32Ah
SYNONYMS:	LiPo , Rechargeable Lithium Polymer Battery
RECOMMENDED USE:	Power system for EOS C VTOL UAV
SUPPLIER OF CELLS:	ShenZhen Grepow Battery Co.,Ltd
MFG OF BATTERY PACK:	Threod Systems
ADDRESS:	Kaare tee 3, 74010, Lubja, Estonia
PHONE:	+372 56269319
EMERGENCY PHONE:	0755-29045795

SECTION 2: Hazard Identification

2.1 No harm at the normal use. If contact the electrolyte in the battery, reference as follows:

2.2 Classification of the substance or mixture

This article is Lithium-Polymer battery with a Watt hour rate of ≥ 100Wh. The rechargeable lithium-polymer batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer and as long as their integrity is maintained. Do not short circuit, puncture, incinerate, crush, immerse in water, force discharge or expose to temperatures above the declared operating temperature range of the product.

2.3 Risk of fire or explosion

Under normal conditions of use, the active materials and liquid electrolyte contained in the cells and batteries are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery container. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow, depending upon the circumstances.

2.4 Classification according to GHS

Acute toxicity, Oral (Category 4)
Acute toxicity, Dermal (Category 3)
Skin, irritate (Category 1B)
Eyes, irritate (Category 1)

Label elements: No information available.

Other hazards No information available.

Section 3. Composition,Information on Ingredients

Composition	CAS NO	EC#	Weight (%)
Lithium Cobalt Oxide	12190-79-3	235-362-0	27.5-42.5%
PVDF	24937-79-9	200-867-7	0.5-1.5%
Graphite	24937-79-9	231-955-3	14-22%
Ethylene carbonate	96-49-1	202-510-0	3.712%
Carbonic acid, ethyl methyl ester			
Dimethyl carbonate	616-38-6	210-478-4	7.425%
Propylene carbonate	108-32-7	203-572-1	1.670%
Vinylene carbonate	872-36-6	212-825-5	0.185%
Lithium hexafluorophosphate(1-)	21324-40-3	244-334-7	2.785%
Carboxymethylcellulose	9004-32-4	---	0.25-0.35%
Polypropylene	9002-88-4	---	2.0-4.2%
Copper	7440-50-8	231-159-6	10-20%
Aluminum	7429-90-5	231-072-3	5-10%
Nickel	7440-02-0	231-853-9	0.2%
SBR	9003-55-8	---	0.6-1.0%
Carbon	1333-86-4	231-153-3	1.0-1.8%

Section 4. First Aid Measures

4.1 Description of first aid measures

4.1.1 General information No special measures required.

4.1.2 After eye contact Flush eyes with plenty of water for several minutes while holding eyelids open. Get medical attention if irritation persists.

4.1.3 After skin contact Remove contaminated clothing and shoes. Immediately wash with water and soap and rinse thoroughly. Wash clothing and shoes before reuse. If irritation occurs, get medical attention.

4.1.4 After inhalation Remove victim to fresh area. Administer artificial respiration if breathing is difficult. Seek medical attention.

4.1.5 After swallowing Do not induce vomiting. Get medical attention.

4.1.6 Self-protection of the first aider Pay attention to self-protection!

4.2 Information for doctor

4.2.1 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

Section 5. Fire Fighting Measure

5.1 Flammability: Not available.

5.1.1 Suitable extinguishing agents Use extinguishing agent suitable for local conditions and the surrounding environment Such as dry powder or CO2.

5.2 Special hazards arising from the substance or mixture

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Lithium Polymer batteries contain flammable electrolyte that may vent, ignite and produce sparks when subjected to high temperature(>150℃(302℉)), 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.

5.3 Advice for firefighters

5.3.1 Protective equipment:

Wear self-contained respirator. Wear fully protective impervious suit.

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate

6.2 Environmental precautions

Do not allow material to be released to the environment without proper governmental permits.

6.3 Steps to be taken in case material is spilled or released

Remove ignition sources, evacuate area. Sweep up using a method that does not generate dust. Collect as much of the spilled material as possible, placed the spilled material into a suitable disposal container. Keep spilled material out of sewers, ditches and bodies of water.

6.4 Waste disposal method

All waste must refer to the United Nations, the national and local regulations for disposal.

6.5 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal considerations

Section 7. Handling and storage

7.1 Precautions for safe handling

Consumption of food and beverage should be avoided in work areas.

Wash hands with soap and water before eating, drinking.
Ground containers when transferring liquid to prevent static accumulation and discharge.

The battery should not be opened, destroyed, or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery.

7.2 Information about fire and explosion protection
Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

7.3 Conditions for safe storage, including any incompatibilities
7.3.1 Requirements to be met by storerooms and receptacles
Store in a cool, dry, well-ventilated place.
Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.
The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.
Keep away from heat, avoiding the long-time of sunlight. Keep container tightly sealed.

7.4 Information about storage in one common storage facility
Keep away from heat, avoiding the long time of sunlight.

7.5 Further information about storage conditions
Keep container tightly sealed.

7.6 Specific and use
No further relevant information available.

Section 8. Exposure Controls, Person Protection

8.1 Control parameters
Ingredients with limit values that require monitoring at the workplace:
No information available.

8.2 Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.

8.2.1 Respiratory Protection
Use suitable respirator when high concentrations are present.

Section 9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

General information	
Appearance	Silver
Form:	Quadrate
Odour:	Odorless
PH:	Not available
Change in condition:	Not available
Melting point:	Not available
Boiling point:	Not available
Freezing point:	Not available
Flash point:	Not available
Flammability:	Not available
Ignition temperature:	Not available
Decomposition temperature:	Not available
Self-igniting	Not available
Danger of explosion:	Not available
Explosion limits:	
Lower:	Not available
Upper:	Not available
Oxplosion limits:	Not available
Vapour pressure:	Not available
Density:	Not available
Relative density:	Not available
Vapour density:	Not available
Evaporation rate:	Not available
Solubility in/Mis cibility	
with water	Not available
n-octanol/water partition	
coefficient:	Not available
Viscosity:	Not available
Dynamic:	Not available
Kinematic:	Not available
Other information:	
Voltage:	26.2 V
Electric capacity:	32000 mAh (made up by 6 individual cells)

Section 10. Stability and Reactivity

10.1 Reactivity:	Data not available.
10.2 Chemical stability:	Stable.
10.3 Possibility of hazardous Reactions	Data not available.
10.4 Conditions to Avoid	Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions
10.5 Incompatibilities	Oxidising agents, alkalis, wate
10.6 Hazardous Combustible	

Products	Toxic Fumes, and may form peroxides.If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.
Hazardous Polymerization	N/A.

Section 11. Toxicological Information

11.1 Information on toxicological effects

Acute toxicity

None, unless battery ruptures. Lung irritant.

Skin corrosion

None, unless battery ruptures. Skin irritant.

Serious eye damage/irritation

None, unless battery ruptures. Eye irritant.

Sensitization to the respiratory tract

Poisoning if swallowed. Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to servere irritation, burning and dryness of the skin may occur. Target organs,nerves, liver and kidneys.

Additional toxicological information:

Toxicological, metabolism and distribution:

No further relevant information available.

Acute effects (acute toxicity, irritation and corrosivity):

No further relevant information available.

CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):

No further relevant information available.

Section 12. Ecological Information

12.1 ECOLOGICAL INFORMATION:

When properly used or disposed, the batteries do not present environmental hazards. The battery does not contain mercury, cadmium or lead. Do not let internal components enter marine environment. Avoid release to waterways, wastewater or groundwater.

Section 13. Disposal Considerations

13.1 WASTE DISPOSAL METHOD:

Waste disposal must be in accordance with the applicable regulations. Disposal should be performed by permitted, professional disposal firms knowledgeable in federal, state or local requirements of hazardous waste transportation. Incineration should never be performed with batteries. The batteries contain recyclable materials. Recycling options available in your local area should be considered when disposing of this product through a licensed waste carrier. The batteries should have their terminal insulated in order to prevent short circuits during transportation to the disposal site.

Section 14. Transport Information

14.1 UN number

UN3480

14.2 UN proper shipping name

Lithium-ion Battery

14.3 Transport hazard class(es)

The goods shall be complied with the requirements of Section IA of Packing Instructions 965 of 60th DGR Manual of IATA (2019edition） or special provision 188 of IMDG CODE（Amdt. 38-16）2016 Edition, including the passing of the UN38.3 test.

14.4 Packing Group

NA

14.5 Enviromental hazards

NA

14.6 Special precautions for users

According to 14.3.

14.4 Transport in bulk

NA

Transport Fashion: By air, by sea, by railway, by road.

U.S. DEPARTMENT OF TRANSPORTATION: Lithium batteries and cells are subjected to the shipping requirements of exceptions under 49 CFR 173.185. Exceptions found in Special Provisions 29, 188, 189, 190, A54, A55, and A100.

PROPER SHIPPING NAME: Lithium ion batteries
HAZARD CLASS: 9
ID NUMBER: 3480
PACKING GROUP: II
LABEL STATEMENT: Miscellaneous

WATER TRANSPORTATION: Shipping of lithium batteries on the sea are regulated by IMDG requirements of UN3480. Exceptions found in Special Provisions 188, 230, 310, 348, and 957.

PROPER SHIPPING NAME: Lithium ion batteries
HAZARD CLASS: 9
ID NUMBER: 3480
PACKING GROUP: II
LABEL STATEMENTS: Miscellaneous

AIR TRANSPORTATION: Shipping of lithium batteries in aircrafts are regulated by IATA and ICAO requirements in special provision A88, A99, A154, A164, A51, and A183.

PROPER SHIPPING NAME: Lithium ion batteries
HAZARD CLASS: 9
ID NUMBER: 3480
PACKING GROUP: II
LABEL STATEMENTS: Miscellaneous

PROPER SHIPPING NAME: Lithium batteries contained in equipment
HAZARD CLASS: 9
ID NUMBER: 3481
PACKING GROUP: I
LABEL STATEMENTS: Miscellaneous

CANADIAN TDG: Lithium batteries and cells are subjected to the shipping requirements found in the Canadian TDG for UN3090 (UN3480 is not in the TDG regulations however TDG regulations allow for the use of UN numbers that are not in the TDG regulations. See Sections 1.9,1.10 and parts 9 and 10 of the TDG Regulations). Exceptions can be found in Special Provisions 34.

PROPER SHIPPING NAME: Lithium polymer batteries
HAZARD CLASS: 9
ID NUMBER: 3480
PACKING GROUP: II
LABEL STATEMENT: Miscellaneous

EUROPEAN GROUND TRANSPORTATION: Lithium batteries and cells are subjected to the shipping requirements of UN3480 found in the ADR (European Agreement Concerning the International Carriage of Dangerous Goods by Road). Exceptions found in Special Provisions 188, 230, 310, 348, 636, and 656

PROPER SHIPPING NAME: Lithium polymer batteries
HAZARD CLASS: 9
ID NUMBER: 3480
PACKING GROUP: II
LABEL STATEMENTS: Miscellaneous

Section 15: Regulatory Information

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT):
CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT):
SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):
311/312 HAZARD CATEGORIES:
313 REPORTABLE INGREDIENTS: Cobalt compounds are considered hazardous and are subjected to reporting requirements of section 313 title III of the superfund amendments and reauthorization act of 1986 (SARA) and 40 CFR part 372.

INTERNATIONAL REGULATIONS:

Lithium batteries are regulated by the United Nations, “Modal Regulations on Transport of Dangerous Goods”.

Section 16. Additional Information

Disclaimer

The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

MSDS Creation Date: November 16, 2022 - Updated: May 4, 2023