Material Safety Data Sheet

APPLICANT	:	Asia Pacific Satellite Inc
ADDRESS	:	9F, 2-dong 98, Gasan Digital 2-ro, Geumcheon-gu Seoul, Republic of Korea(08506)
BRAND NAME	:	N/A
SAMPLE NAME	:	Rechargeable Li-Polymer Battery
MODEL NAME	:	524388
ISSUE DATE	:	2024-06-18

Shenzhen Morlab Communications Technology Co., Ltd.

Edited by : Tao Qing

Tao Qing

Approved by : Li Dong

Li Dong

1. Chemical Product and Company Identification

Product Name	Rechargeable Li-Polymer Battery
Model Name	524388
Rating	3.87 V, 3400 mAh, 13.16 Wh
Manufacturer	Guangdong Fenghua New Energy Co., Ltd.
Manufacturer Address	No.3 East of Sanrong Road, Duanzhou District, Zhaoqing, Guangdong Province, China
Emergency Telephone Number	+86-13822649987
Factory	Guangdong Fenghua New Energy Co., Ltd. Shenzhen Branch
Factory Address	1-3/F, Workshop A9, LinPoKeng Industrial Zone, HaoSi, No.165, NanPu Road, ShangLiao Community, XinQiao Street, BaoAn District, ShenZhen City, GuangDong Province, P.R.China

2. Hazards Identification

Route(s) of Entry

There is no hazard when the measures for handling and storage are followed.

Signs and Symptoms of exposure

In case of cell damage, possible release of dangerous substances and a flammable gas mixture

OSHA Hazard communication: this material is not considered hazardous by the OSHA Hazard communication Standard 29CFR 1910.120.

Carcinogenicity (NTP): Not listed

Carcinogenicity (IARC): Not listed

Carcinogenicity (OSHA): Not listed

Special hazards for human health and environment

There is no hazard when the measures for handling and storage are followed.

In case of cell damage, possible release of dangerous substances and a flammable gas mixture

3. Composition Information

Hazardous Ingredients	CAS Number	Approximate% of total weight
Lithium Cobalt Oxide	12190-79-3	36.2
1,3-Propanesultone	1120-71-4	0.3
Polyvinylidene Fluoride(PVDF)	24937-79-9	0.3
Aluminum	7429-90-5	3.2

Graphite	7782-42-5	26.3
Styrene-Butadiene Rubber (SBR)	9003-55-8	0.8
Carboxymethylcellulose	9000-11-7	0.3
Copper	7440-50-8	9.9251
Nickel	7440-02-0	1.95
Lithium Hexafluorophosphate	21324-40-3	14.5
Polyethylene	9002-88-4	0.63
Nylon	24937-16-4	1.5
Nickel Sulfamic Acid	124594-15-6	0.50000
Epoxy Resin	25085-99-8	0.076700
Titanium Dioxide	13463-67-7	0.01537
Diethyleneglycol Monoethyl Ether Acetate	112-15-2	0.19366
Polyimide	25038-81-7	0.09160
Epoxy	25036-25-3	0.0048
Acrylonitrile Butadiene Methacrylic Acid Polymer	9010-81-5	0.06430
Epoxy	25068-38-6	0.00285
Magnesium	7439-95-4	0.00585
Bismuth	7440-69-9	0.09943
Arsenic	7440-38-2	0.05727
Phosphorus	7723-14-0	0.0002
1.2-Propylene Glycol Diacetate	868-77-9	0.08845
Silica	68611-44-9	0.00002
Potassium Aurocyanide; (Gold Potassium Cyanide)	13967-50-5	0.00003
Carbon	7440-44-0	0.28285
Manganese Powder	7439-96-5	0.00002
Silicon	7440-21-3	0.00001
Sulfur	7704-34-9	0.00285

Toluence	108-88-3	0.00002
Release Liner	25038-59-9	0.00585
Fe	7439-89-6	0.19943
Zn	7440-66-6	0.05827
Palladium	7440-05-3	0.05727
Gold	7440-57-5	0.10022
Ag	7440-22-4	0.08432
Pd	7440-05-3	0.08845
Sillca(Amorphous)A	60676-86-0	0.00003
W	7440-33-7	0.00001
N-Methyl-2-Pyrrolidone	872-50-4	0.05004
Methanol	67-56-1	0.28185
3,6,9-Trioxaundecamethylene Dimethacrylate	109-17-1	0.1433
Titanium	7440-32-6	0.29733
Aluminum Oxide	1344-28-1	0.00004
Silicon Dioxide	14808-60-7	0.00007
Magnesium Oxide	1309-48-4	0.00001
Calcium Oxide	1305-78-8	0.00001
Bismuth Trioxide	1304-76-3	0.00001
Chromium Oxide	1308-38-9	0.00001
Talcum	14807-96-6	0.00001
Ruthenium Dioxide	12036-10-1	0.00011
Lead Monoxide	1317-36-8	0.00001
Boron Oxide	1303-86-2	0.00004
Zinc Oxide	1314-13-2	0.0004
Palladium	7440-5-3	0.0002
Glass	65997-18-4	0.0006
Chromium	7440-47-3	0.0002

Tin	7440-31-5	0.00283
Manganese Oxide	1317-35-7	0.005
Nickel Oxide	1313-99-1	0.001
Iron(III) Oxide	1309-37-1	0.0001
Palladium	7440-05-3	0.0004
Sillicon Dioxide	7631-86-9	0.0004
Barium Titanate	12047-27-7	0.18713
Titanium Carbide	12070-08-5	0.00011
Tungsten Carbide	12070-12-1	0.00001
Continuous Filament Fiber Glass	65997-17-3	0.00001
Palladium	7440-05-3	0.0012
Epoxy Acrylic Oligomer	71281-65-7	0.00011
Additivetian	63148-53-8	0.0017
Additivetian	5495-84-1	0.0012
Filler Barium sulfate	7727-43-7	0.00185
Aluminum hydroxide	21645-51-2	0.0059800
Aluminum diethylphosphonate	225789-38-8	0.0018
Diamino diphenyl sulfone	80-08-0	0.054
Carbon Black	1333-86-4	0.209600
DipropyleneGlycolMonomethyl Ether	34590-94-8	0.693400
High Boiling Point Petroleum Solvent	64742-94-5	0.0285
Isobornyl methacrylate	7534-94-3	0.03742
Acrylic acid	79-10-7	0.00005
2,2-Dimethoxy-2-phenylacetophenone	24650-42-8	0.00001
Cobalt	7440-48-4	0.0004
Lead	7439-92-1	0.0002
disproportionated rosin	1446-61-3	0.005
Oxirane, 2-methyl-,polymer with oxirane, monobutyl ether	9038-95-3	0.001

Castor Oil Hydrogenated	8001-78-3	0.0001
Glue	68410-45-7	0.00001
Flame retardants	917-23-7	0.00001

4. First Aid Measures

General information

The following first aid measures are required only in case exposure to interior battery components after damage of the external battery casing.

Undamaged, closed cells do not represent a danger to the health.

Skin contact

If skin contact with contents of open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

Eye contact

If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.

Inhalation

If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice

Ingestion

If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. Call a physician.

5. Fire Fighting Measures

Suitable extinguishing media

Cold water and dry powder in large amount are applicable.

Use metal fire extinction powder or dry sand if only few cells are involved

Specific Hazards arising from the chemical

May form hydrofluoric acid if electrolyte comes into contact with water.

In case of fire, the formation of the following flue gases cannot be excluded: Hydrogen fluoride (HF), Carbon monoxide and carbon dioxide.

Protective Equipment and precautions for firefighters

As for any fire, evacuate the area and fight the fire from a sate distance.

Wear a pressure-demand, self-contained breathing apparatus and full protective gear.
Fight fire from a protected location or a safe distance.

Flammable Properties

In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.

6. Accidental Release Measures

Personal Precautions

Restrict access to area until completion of clean-up.
Do not touch the spilled material.
Wear adequate personal protective equipment as indicated in Section 8

Environmental Precautions

Prevent material from contaminating soil and from entering sewers or waterways.
Methods for cleaning up/taking up
Take up mechanically and send for disposal.

Methods and materials for containment

Stop the leak if safe to do so.
Contain the spilled liquid with dry sand of earth.
Clean up spills immediately.

7. Handling and Storage

Handing

Advice on safe handing

Avoid short circuiting the cell. Avoid mechanical damage of the cell.
Do not open or disassemble.
Don’t handing Lithium Ion Battery with metalwork.
Advice on protection against fire and explosion,
Ensure good ventilation/exhaustion at the workplace.

Storage

Requirement for storage rooms and vessels
Storage the cell at temperature -20℃~+45℃, low humidity and no corrosive gas atmosphere.
In case of long period storage (more than 3 months), storage the cell at temperature range of -10℃~+20℃, low humidity and no corrosive gas atmosphere.
The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more.
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 of fore.
Avoid storage in direct sunlight.
Do not store together with oxidizing and acidic materials.

8. Exposure Controls/Personal Protection

Safe guard procedures

Engineering Controls

Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor.

Keep away from heat and open flame. Store in a cool, dry place.

Personal Protective Equipment

Respiratory Protection: Not necessary under normal conditions.

Skin and body Protection: Not necessary under normal conditions, Wear neoprene or nitride rubber gloves if handing an open or leaking battery.

Hand protection: Wear neoprene or natural rubber material gloves if handing an open of leaking battery.

Eye Protection: Not necessary under normal conditions, Wear safety glasses if handing an open or leaking battery.

Other Protective Equipment

Have a safety shower and eye wash fountain readily available in the immediate work area.

Hygiene Measures

Do not eat, drink, or smoke in work area.

9. Physical and Chemical Properties

Appearance

Appearance & Odor	Prismatic, Odorless

Important health, safety and environmental information

Change in condition	Not available
PH, with indication of the concentration	Not available
Melting point/freezing point	Not available
Boiling Point, initial boiling point and boiling range	Not available
Flash Point	Not available
Upper/Lower flammability or explosive limits	Not available
Density/relative density	Not available
Solubility in Water	Insoluble
Auto-ignition temperature	Not available
Decomposition temperature	Not available

Flammability (soil, gas)	Not available
Viscosity	Not available

10. Stability and Reactivity

Stability

The product is stable under normal conditions.

Conditions to avoid

Do not subject Lithium Ion Battery to mechanical shock.

Vibration encountered during transportation does not cause leakage, fire or explosion.

Do not disassemble, crush, short or install with incorrect polarity.

Avoid mechanical or electrical abuse.

Materials to avoid

No materials to be especially mentioned

Hazardous decomposition products

In case of open cells, there is the possibility of hydrofluoric acid and carbon monoxide release.

Possibility of Hazardous Reactions

Will not occur

Additional information

No decomposition if stored and applied as directed.

11. Toxicological Information

Irritation

Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.

Sensitization

Not Available

Neurological Effects

Not Available

Reproductive Toxicity

Not Available

Mutagenicity (Genetic Effects)

Not Available

Toxicologically Synergistic Materials

Not Available

12. Ecological Information

Further information

Ecological injuries are not known or expected under normal use.
Do not flush into surface water or sanitary sewer system.

13. Disposal Considerations

Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in Federal, State or Local requirements of hazardous waste treatment and hazardous waste transportation.

14. Transport Information

With regard to transport, the following regulations are cited and considered

- The International Maritime Dangerous Goods (IMDG) Code by International Maritime Organization (IMO), Dangerous Goods Regulations (DGR) by International Air Transport Association (IATA) and Technical Instructions for the Safe Transport of Dangerous Goods by Air (TI) by International Civil Aviation Organization (ICAO). These regulations are based on the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria.
- The International Civil Aviation Organization (ICAO) Technical Instructions, Packing Instruction 965-967, Section IB or II (2023-2024 Edition).
- The International Air Transport Association (IATA) Dangerous Goods Regulations, Packing Instruction 965-967, Section IB or II (65th Edition, 2024). For cells, the Watt-hour rating should not be more than 20Wh; For batteries, the Watt-hour rating should not be more than 100Wh. Watt-hour rating must be marked on the outside of the battery case.
- The International Maritime Dangerous Goods (IMDG) Code (2022 Edition), [Special provision 188, 230].
- The US Hazardous Materials Regulations 49 CFR (Code of Federal Regulations) Sections 173-185 Lithium batteries and cells.
- The UN classification number: Class 9 3480(lithium ion batteries) / 3481(lithium ion batteries contained in equipment or lithium ion batteries packed with equipment).
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, ST/SG/AC.10/11/ Rev.7/Amend.1, section 38.3 Lithium batteries.

15. Regulatory Information

Regulatory information EU

Labeling

Hazardous components which must be listed on the label

As an article the product does not need to be labeled in accordance with EC directives or respective national laws.

According to Directive 2012/19/EU, the batteries have to be marked with the crossed wheel bin symbol.

According to Dangerous Goods Regulations, the battery packs have to be marked with the Watt-hour rating.

U.S. Regulations

National Inventory TSCA

All of the components are listed on the TSCA inventory.

SARA

To the best of our knowledge this product contains no toxic chemicals subject to the supplier notification requirements of Section 313 of the Superfund Amendments and Reauthorization Act (SARA/EPCRA) and the requirements of 40 CFR Part 372.

16. Other Information

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.

This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

DISCLAIMER

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. We make no warranty of merchant ability or any other warranty express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of the information for their particular purposes. In no way shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental consequential or exemplary damages, howsoever arising from using the above information.

—— End of Material Safety Data Sheet ——