Safety Data Sheet

Mint series

1 Identification

Product identifier

Product Name	Rechargeable Li-ion Battery System
Product Model	Mint-JKE5, Mint-JKE10, Mint-JKE15, Mint-JKE20
CAS No.	Not applicable
EC No.	Not applicable
Molecular Formula	Not applicable

Recommended use of the product and restrictions on use

Relevant identified uses	Please consult manufacturer.
Uses advised against	Please consult manufacturer.

Details of the manufacturer

Manufacturer Name	iPotisEdge Co., Ltd.
Manufacturer Address	Builiding 28 West, No.2 Taishan Road, Suzhou New District.
Manufacturer Post Code	215129
Manufacturer Telephone	86 15106135393
Manufacturer Fax	0512-66915880
Manufacturer E-mail	li.jing@ipotisedge.com
Emergency phone number	0512- 66915889

Details of the importer

Importer Name	LUMOS ESS PTY LTD
Importer Address	Care of FRANCIS TAN ACCOUNTANT, SUITE 802, 155 CASTLEREAGH STREET, SYDNEY, NSW, 2000
Contact Info	XIAOJING WANG
Importer Telephone	0450014188
Importer Fax	http://www.lumosess.com.au/
Importer E-mail	jing@francistan.com.au

2 Hazard(s) identification

Hazard classification according to GHS

The product meets the definition of "article". In the Globally Harmonized Chemical Classification and Labeling System (GHS), the "articles" defined by the US Occupational Safety and Health Administration "Hazard Communication Standard" (29 CFR 1910.1200) or similar definitions do not fall within the scope of this system. [Rev. 9 (2021) Part 1.3.2.1.1].According to GHS system (9th revised edition), not classified as a hazardous chemical.

GHS Label elements

Hazard pictograms	Not applicable
Signal word	Not applicable

Hazard statements

Hazard statements	Not applicable

Precautionary statements

◆ Prevention

Prevention	Not applicable

◆ Response

Response	Not applicable

◆ Storage

Storage	Not applicable

◆ Disposal

Disposal	Not applicable

Hazard description

◆ Physical and chemical hazards

	When the outer enclosure and safety circuits have been compromised or have been significantly damaged, it is likely to contain substantial electrical charge and can cause injury or death if mishandled. Mechanical damage can lead to danger. Battery products exposed to high temperature conditions, may produce heat out of control, causing fire.

◆ Health hazards

Inhaled	According to the material form, it is not the normal way of contacting.
Ingestion	Accidental ingestion of the product may be harmful to the health of the individual.
Skin Contact	No harm in general situation.
Eye	This product may cause temporary discomfort following direct contact with the eye.

◆ Environmental hazards

	Please refer to 12th chapter of SDS.

3 Composition/information on ingredients

Substance/mixture

	Mixture

Component	CAS No.	EC No.	Concentration (wt, %)
Phosphoric acid,iron(2+) lithium salt (1:1:1)	15365-14-7	604-917-2	Commercial secrets

Graphite	7782-42-5	231-955-3	Commercial secrets
Ethyl methyl carbonate	623-53-0	613-014-2	Commercial secrets
Copper	7440-50-8	231-159-6	Commercial secrets
Aluminium	7429-90-5	231-072-3	Commercial secrets
Ethylene carbonate	96-49-1	202-510-0	Commercial secrets
Poly(ethylene)	9002-88-4	618-339-3	Commercial secrets
Ethene, 1,1-difluoro-, homopolymer	24937-79-9	607-458-6	Commercial secrets
Lithium hexafluorophosphate(1-)	21324-40-3	244-334-7	Commercial secrets
Propylene carbonate	108-32-7	203-572-1	Commercial secrets

4 First-aid measures

Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Skin contact	No harm in general situation. First aid is not needed.
Ingestion	Never give anything by mouth to an unconscious person. Call a physician immediately.
Inhalation	Move victim into fresh air. If breathing is difficult, give oxygen and consult a physician immediately.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

Most important symptoms/effects, acute and delayed

1	Please see section 11.

Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

5 Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media suitable for surrounding area.
Unsuitable extinguishing media	There is no restriction on the type of extinguisher which may be used.

Specific hazards arising from the substance or mixture

1	Development of hazardous combustion gases or vapor possible in the event of fire.
2	May expansion or decompose explosively when heated or involved in fire.

Special protective equipment and precautions for fire-fighters

1	As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.

2	Fight fire from a safe distance, with adequate cover.
3	Prevent fire extinguishing water from contaminating surface water or the ground water system.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

1	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
2	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
3	Use personal protective equipment,do not breathe dust/fume.

Environmental precautions

1	Prevent further leakage or spillage if safe to do so.
2	Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

1	Cut off the source of the leak as much as possible.
2	Keep leaks in a ventilated place.
3	Isolation of contaminated areas and restrictions on access.
4	It is recommended that emergency personnel wear dust masks.
5	Collect the spill with a clean shovel and place it in a clean, dry, loosely closed container and move the container away from the leak.
6	Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

7 Handling and storage

Precautions for safe handling

1	Handling is performed in a well ventilated place.
2	Wear suitable protective equipment.
3	Avoid contact with skin and eyes.
4	Keep away from heat/sparks/open flames/ hot surfaces.

Conditions for safe storage, including any incompatibilities

1	Keep containers tightly closed.
2	Keep containers in a dry, cool and well-ventilated place.
3	Keep away from heat/sparks/open flames/hot surfaces.
4	Store away from incompatible materials and foodstuff containers.

8 Exposure controls/personal protection

Control parameters

Component	Country/Region	Limit value - Eight hours		Limit value - Short term	
		ppm	mg/m³	ppm	mg/m³
Graphite	USA - OSHA		15		
	South Korea		2		
	Ireland		10		

	Germany (DFG)		4		
	Denmark		2.5		5
	Australia		3 (4)		
	USA-ACGIH		2		
Copper	The Netherlands		0.1		
	Poland		0.2		
	Latvia		0.5		1
	Germany (DFG)		0.01		0.02
Aluminium	USA - OSHA		15		
	South Korea		10		
	Ireland		1		
	Germany (DFG)		4		
	Denmark		5		10
	Australia		10		
	USA-ACGIH		1		
Propylene carbonate	Latvia		2		

◆ Biological limit values

Component	Standard	Biological monitoring index	Biological limits value	Sampling time	Remark
Lithium hexafluorophosphate(1-)	SCOEL(EU)	Fluorine/urine	8mg/L	end of shift	

◆ Monitoring methods

1	EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
2	GBZ/T 300 series standard Determination of toxic substances in workplace air.

Engineering controls

1	Ensure adequate ventilation, especially in confined areas.
2	Ensure that eyewash stations and safety showers are close to the workstation location.
3	Set up emergency exit and necessary risk-elimination area.
4	Handle in accordance with good industrial hygiene and safety practice.

Personal protection equipment

General requirement	No special requirements, please see the description below.
Eye protection	In general situation, eye protection is not needed. In the production process, when contacting with vapour or dust, tightly fitting safety goggles.
Hand protection	In general situation, hand protection is not needed.
Respiratory protection	In general situation, respiratory protection is not needed. If exposure limits are exceeded or if irritation or other symptoms are experienced, wear dust proof mask or gas defence mask.
Skin and body protection	In general situation, skin and body protection are not needed.

9 Physical and chemical properties and safety characteristics

Physical and chemical properties

Physical state	Solid (see picture for details)
Colour	White
Odor	No special odor
Odor threshold	No information available
pH	No information available
Melting point/freezing point(°C)	No information available
Initial boiling point and boiling range(°C)	No information available
Flash point(Closed cup,°C)	Not applicable
Evaporation rate	Not applicable
Flammability	Not flammable
Upper/lower explosive limits[%(v/v)]	Upper limit: No information available; Lower limit: No information available
Vapor pressure	Not applicable
Relative vapour density(Air=1)	Not applicable
Relative density(Water=1)	No information available
Solubility	Insoluble in water
n-octanol/water partition coefficient	No information available
Auto-ignition temperature(°C)	No information available
Decomposition temperature(°C)	No information available
Kinematic viscosity	Not applicable
Particle characteristics	No information available

10 Stability and reactivity

Stability and reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical stability	Stable under proper operation and storage conditions.
Possibility of hazardous reactions	No information available.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	Metal acetylide, halogen, interhalogen, halogen oxides, nitric acid, nitrous oxide, nitrates, nitrites, halogen oxyacid salts, chromates, permanganates, inorganic peroxides, metal oxides and peroxyformic acid. Halogen, interhalogen, strong oxidant, water and acids. Oxidants, halogen, interhalogen and mercury.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 Toxicological information

Acute toxicity

Component	LD_{50}(oral)	LD_{50}(dermal)	LC_{50}(inhalation,4h)
Ethylene carbonate	10000mg/kg(Rat)	> 3000mg/kg(Rabbit)	No information available
Propylene carbonate	34600mg/kg(Rat)	> 23800mg/kg(Rabbit)	No information available

Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP
Phosphoric acid,iron(2+) lithium salt (1:1:1)	Not Listed	Not Listed
Graphite	Not Listed	Not Listed
Ethyl methyl carbonate	Not Listed	Not Listed
Copper	Not Listed	Not Listed
Aluminium	Not Listed	Not Listed
Ethylene carbonate	Not Listed	Not Listed
Poly(ethylene)	Category 3	Not Listed
Ethene, 1,1-difluoro-,homopolymer	Not Listed	Not Listed
Lithium hexafluorophosphate(1-)	Not Listed	Not Listed
Propylene carbonate	Not Listed	Not Listed

Others

Battery Expansion Module	
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Based on available data, the classification criteria are not met
Skin sensitization	Based on available data, the classification criteria are not met
Respiratory sensitization	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT-single exposure	Based on available data, the classification criteria are not met
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met
Reproductive toxicity(additional)	Based on available data, the classification criteria are not met

12 Ecological information

Acute aquatic toxicity

Component	Fish	Crustaceans	Algae
Aluminium	LC_{50} : 1.55mg/L (96h)(Fish)	No information available	No information available
Graphite	LC_{50} : 100mg/L (96h)(Fish)	No information available	No information available
Phosphoric acid,iron(2+)	LC_{50} : >28mg/L	EC_{50} : > 28mg/L (48h)()	No information available

lithium salt (1:1:1)	(96h)(Fish)		
Copper	LC_{50} : 0.665mg/L (96h)(Fish)	EC_{50} : 0.02mg/L (48h)()	ErC_{50} : 7.9mg/L (96h)()
Ethyl methyl carbonate	LC_{50} : >100mg/L (96h)(Fish)	EC_{50} : > 100mg/L (48h)()	No information available
Ethylene carbonate	LC_{50} : >100mg/L (96h)(Fish)	EC_{50} : > 100mg/L (48h)()	No information available
Propylene carbonate	LC_{50} : 1000mg/L (96h)(Fish)	No information available	No information available
Lithium hexafluorophosphate(1-)	LC_{50} : 68mg/L (96h)(Fish)	No information available	No information available

Chronic aquatic toxicity

Component	Fish	Crustaceans	Algae
Lithium hexafluorophosphate(1-)	NOEC: 3.1mg/L(Fish)	No information available	No information available

Persistence and degradability

Component	Persistence (water/soil)	Persistence (air)
Graphite	Low	Low
Ethyl methyl carbonate	High	High
Ethylene carbonate	High	High
Poly(ethylene)	Low	Low
Propylene carbonate	High	High

Bioaccumulative potential

Component	Bioaccumulative potential	Comments
Graphite	Low	Log Kow=0.5294
Ethyl methyl carbonate	Low	Log Kow=0.7247
Ethylene carbonate	Low	Log Kow=-0.3388
Poly(ethylene)	Low	Log Kow=1.2658
Propylene carbonate	Low	Log Kow=-0.41

Mobility in soil

Component	Mobility in soil	Soil Organic Carbon-Water Partitioning Coefficient (Koc)
Graphite	Low	23.74
Ethyl methyl carbonate	Low	15.22
Ethylene carbonate	Low	9.168
Poly(ethylene)	Low	14.3
Propylene carbonate	Low	14.85

Results of PBT and vPvB assessment

Component	Results of PBT and vPvB assessment [according to (EC) No 1907/2006]
Phosphoric acid,iron(2+) lithium salt (1:1:1)	Not available
Graphite	Not applicable
Ethyl methyl carbonate	Not PBT/vPvB
Copper	Not applicable
Aluminium	Not applicable
Ethylene carbonate	Not PBT/vPvB
Poly(ethylene)	Not available
Ethene, 1,1-difluoro-,homopolymer	Not available
Lithium hexafluorophosphate(1-)	Not applicable
Propylene carbonate	Not PBT/vPvB

13 Disposal considerations

Disposal considerations

Waste chemicals	Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
Contaminated packaging	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.
Disposal recommendations	Refer to section waste chemicals and contaminated packaging.

14 Transport information

Label

Transporting Label	

IMDG-CODE

UN number	3480
UN proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries)
Transport hazard class	9
Transport subsidiary hazard class	None
Packing group	Packagings shall conform to the packing group Ⅱ performance level
Marine pollutant (Yes or no)	No

ICAO/IATA-DGR

UN number	3480
UN proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries)
Transport hazard class	9

Transport subsidiary hazard class	None
Packing group	Packagings shall conform to the packing group Ⅱ performance level

UN-ADR

UN number	3480
UN proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries)
Transport hazard class	9
Transport subsidiary hazard class	None
Packing group	Packagings shall conform to the packing group Ⅱ performance level

15 Regulatory information

International chemical inventory

Component	EC inventory	TSCA	DSL	IECSC	NZIoC	PICCS	KECI	AIICS	ENCS
Phosphoric acid,iron(2+) lithium salt (1:1:1)	×	√	√	√	×	×	√	×	√
Graphite	√	√	√	√	√	√	√	√	×
Ethyl methyl carbonate	×	√	×	√	×	√	√	×	√
Copper	√	√	×	√	√	√	√	√	√
Aluminium	√	√	√	√	√	√	√	√	√
Ethylene carbonate	√	√	√	√	√	√	√	√	√
Poly(ethylene)	×	√	√	√	√	√	√	√	√
Ethene, 1,1-difluoro-,homopolymer	×	√	√	√	√	√	√	√	√
Lithium hexafluorophosphate(1-)	√	√	×	√	×	√	√	√	√
Propylene carbonate	√	√	√	√	√	√	√	√	√

[EC inventory] European Inventory of Existing Commercial Chemical Substances
[TSCA] United States Toxic Substances Control Act Inventory
[DSL] Canadian Domestic Substances List
[IECSC] China Inventory of Existing Chemical Substances
[NZIoC] New Zealand Inventory of Chemicals
[PICCS] Philippines Inventory of Chemicals and Chemical Substances
[KECI] Korea Existing Chemicals Inventory
[AIICS] Australian. Inventory of Industrial Chemical (AIICS)
[ENCS] Japan Inventory of Existing & New Chemical Substances

Note:
"√" Indicates that the substance included in the regulations.
"x" No data or not included in the regulations.

16 Other information

Information on revision

Creation Date	2023/03/07
Revision Date	2023/03/07

Reason for revision	-

Reference

[1] IPCS: The International Chemical Safety Cards (ICSC), website:http://www.ilo.org/dyn/icsc/showcard.home。
[2] IARC, website:http://www.iarc.fr/。
[3] OECD: The Global Portal to Information on Chemical Substances, website: https://www.echemportal.org/echemportal/substancesearch/index.action。
[4] CAMEO Chemicals, website:http://cameochemicals.noaa.gov/search/simple。
[5] NLM: ChemIDplus, website:http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp。
[6] EPA: Integrated Risk Information System, website:http://cfpub.epa.gov/iris/。
[7] U.S. Department of Transportation: ERG, website:http://www.phmsa.dot.gov/hazmat/library/erg。
[8] Germany GESTIS-database on hazard substance, website:http://gestis-en.itrust.de/。

Abbreviations and acronyms

CAS	Chemical Abstracts Service	UN	The United Nations
PC-STEL	Short term exposure limit	OECD	Organization for Economic Co-operation and Development
PC-TWA	Time Weighted Average	IMDG-CODE	International Maritime Dangerous Goods CODE
MAC	Maximum Allowable Concentration	IARC	International Agency for Research on Cancer
DNEL	Derived No Effect Level	ICAO	International Civil Aviation Organization
PNEC	Predicted No Effect Concentration	IATA	International Air Transportation Association
NOEC	No Observed Effect Concentration	ACGIH	American Conference of Governmental Industrial Hygienists
LC_{50}	Lethal Concentration 50%	NFPA	National Fire Protection Association
LD_{50}	Lethal Dose 50%	NTP	National Toxicology Program
EC_{50}	Effective Concentration 50%	PBT	Persistent, Bioaccumulative, Toxic
EC_X	Effective Concentration X%	vPvB	very Persistent, very Bioaccumulative
P_{OW}	Partition coefficient Octanol: Water	CMR	Carcinogens, mutagens or substances toxic to reproduction
BCF	Bioconcentration factor	RPE	Respiratory Protective Equipment
ED	Endocrine disruptor		

Disclaimer

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 9th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.