	SAFETY DATA SHEET	Version: R0001.0001
		Date of issue: 2020-02-24
		Revision date: Not applicable
	LG INR18650H26 Rechargeable Lithium-Ion Battery	Change List:

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1. IDENTIFICATION

A. Product name

- LG INR18650H26 Rechargeable Lithium-Ion Battery

B. Recommended use and restriction on use

- General use : Not available
 - Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

o Manufacturer information

- Company name : LG Chem, Ltd.
 - Address : Gwahaksaneop 3-ro, Oksan-myeon, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, Republic of Korea
 - Dept. :
 - Telephone number : 82-42719-3857
 - Emergency telephone number :
 - Fax number :
 - E-mail address :

o Supplier/Distributor information

- Company name : LG Chem, Ltd.
 - Address : 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea
 - Dept. :
 - Telephone number : 82-42719-3857
 - Emergency telephone number :
 - Fax number :
 - E-mail address :

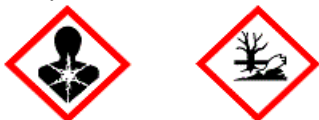
2. HAZARD IDENTIFICATION

A. GHS Classification

- Carcinogenicity : Category1A
 - Specific target organ toxicity(Repeated exposure) : Category2
 - Chronic aquatic toxicity : Category1

B. GHS label elements

o Hazard symbols



o Signal words

- Danger

o Hazard statements

- H350 May cause cancer
 - H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)
 - H410 Very toxic to aquatic life with long lasting effects

o Precautionary statements

1) Prevention

- P201 Obtain special instructions before use.
 - P202 Do not handle until all safety precautions have been read and understood.
 - P260 Do not breathe dust/fume/gas/mist/vapours/spray.
 - P273 Avoid release to the environment.

- P281 Use personal protective equipment as required.

2) Response

- P308+P313 If exposed or concerned: Get medical advice/attention.

- P314 Get medical advice/attention if you feel unwell.

- P391 Collect spillage.

3) Storage

- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

o NFPA grade (0 ~ 4 level)

- Health : 0, Flammability : 0, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Cobalt lithium manganese nickel oxide	-	182442-95-1	20.00 ~ 50.00
Graphite	Black lead ; Mineral carbon ; Plumbago	7782-42-5	10.00 ~ 30.00
1,3-Dioxolan-2-one	-	96-49-1	6
Dimethyl carbonate	-	616-38-6	6
Aluminium	Allbri aluminum paste and powder ; Aluminium bronze ; Aluminium flake ; Aluminum dehydrated ; Aluminum powder ; Metana ; Metana aluminum paste ; Noral aluminium ;	7429-90-5	2.00 ~ 10.00
Copper	Copper concentrate ; Copper element ; Copper powder ; Copper metal ;	7440-50-8	2.00 ~ 10.00
Stainless steel, Nickel and inert materials	-	12597-68-1	1
Carboxymethyl ether cellulose	-	9000-11-7	1
Ethynylbenzene polymer with 1,3-butadiene	-	9003-55-8	1
Silicon monoxide	-	10097-28-6	10.00 ~ 20.00
1,1-Difluoroethene homopolymer	-	24937-79-9	~ 5.00

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.
- Remove contaminated clothing, shoes and isolate.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Notify your local firestation and inform the location of the fire and characteristics hazard.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Do not approach the tank surrounded by fire until it is extinguished.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Ventilate closed spaces before entering.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.
- Disposal of waste shall be in compliance with the Wastes Control Act
- Appropriate container for disposal of spilled material collected.
- Avoid entering to sewers or water system.
- Prevent the influx to waterways, sewers, basements or confined spaces.
- Spilled material should be treated as a potential risk of waste collected.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Avoid contact with incompatible materials.
- Get the manual before use.
- Refer to Engineering controls and personal protective equipment.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Do not apply direct heat.
- Store according to current laws and regulations
- Do not apply any physical shock to container.
- Keep in the original container.

- No open fire.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.
- Store away from water and sewer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- **ACGIH TLV**
 - [Cobalt lithium manganese nickel oxide] : TWA 0.1 mg/m³, Nickel Soluble inorganic compounds
 - [Graphite] : TWA, 2 mg/m³, Respirable particulate mass
 - [Aluminium] : TWA, 1 mg/m³, Respirable Particulate Matter
 - [Copper] : TWA, 0.2 mg/m³ (Fume, as Cu), TWA, 1 mg/m³ (Dusts and Mists, as Cu)
- **OSHA PEL**
 - [Aluminium]: 15 mg/m³ (Total dust), 5 mg/m³ (Respirable fraction)
 - [Graphite]: 15 mppcf (Graphite, Natural)/15 mg/m³ (Total dust), 5 mg/m³ (Respirable fraction)(Graphite, synthetic)
 - [Cobalt lithium manganese nickel oxide]: 1mg/m³
 - [Copper]: 0.1 mg/m³ (Fume), 1 mg/m³ (Dusts and mists)

B. Engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Individual protection measures, such as personal protective equipment

- **Respiratory protection**
 - Respiratory protection is ranked in order from minimum to maximum.
 - Consider warning properties before use.
- **Eye protection**
 - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- **Hand protection**
 - Wear appropriate glove.
- **Skin protection**
 - Wear appropriate clothing.
- **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Other
- Color	Not available
B. Odor	Not available
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	Not available
N. Specific gravity(Relative density)	Not available
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	Not available

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- **(Respiratory tracts)**
 - Not available
- **(Oral)**
 - Not available
- **(Eye-Skin)**
 - Not available

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- **Acute toxicity**
 - * **Oral**
 - Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
 - [Cobalt lithium manganese nickel oxide] : LD50 >2000 mg/kg Rat (NICNAS)
 - [Graphite] : LD50 >2000 mg/kg Rat (OECD Guideline 423 ,GLP)
 - [Aluminium] : LD50 > 15900 mg/kg Rat (OECD TG 401)
 - [Copper] : LD50 481 mg/kg Rat (OECD TG 401, GLP)
 - [Carboxymethyl ether cellulose] : LD50 > 5000 mg/kg Rat
 - [Silicon monoxide] : LD50 > 5000 mg/kg Rat (KOSHA)
 - * **Dermal**
 - Product (ATEmix) : >5000mg/kg
 - [Copper] : LD50 > 2000 mg/kg Rat (OECD TG 402, GLP)
 - * **Inhalation**
 - Product (ATEmix) : Not available
 - [Cobalt lithium manganese nickel oxide] : 0.05< LC50 <=0.5 mg/L/4hr
 - [Graphite] : Dust LC50 > 2 mg/ℓ 4 hr Rat (OECD Guideline 403, GLP) (No deaths, not classified (ECHA))
 - [Aluminium] : Dust LC50 > 0.888 mg/ℓ 4 hr Rat (OECD TG 403, GLP)
 - [Copper] : LC50 > 5.11 mg/ℓ 4 hr Rat (OECD TG 436, GLP)
- **Skin corrosion/irritation**
 - Not available
- **Serious eye damage/irritation**
 - Not available
- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - [Ethenylbenzene polymer with 1,3-butadiene] : Group 3
 - * **OSHA**
 - Not available
 - * **ACGIH**

- [1,1-Difluoroethene homopolymer] : A4 (Fluorides)
- [Aluminium] : A4
- * **NTP**
 - Not available
- * **EU CLP**
 - Not available
- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - Not available
- **STOT-repeated exposure**
 - May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [Cobalt lithium manganese nickel oxide] : LL50 >100 mg/l 96 hr Pimephales promelas (NICNAS)
 - [Graphite] : LC50 > 100 mg/l 96 hr (Danio rerio (OECD Guideline 203, GLP)
 - [Copper] : LC50 0.286 mg/l 96 hr Oncorhynchus mykiss (LC50 0.28640% sewage treatment plant effluent, 0.164river water mg/l 96hr)
 - [Silicon monoxide] : LC50 92.450 mg/l 96 hr (Estimate)
- **Crustaceans**
 - [Cobalt lithium manganese nickel oxide] : EL50 >100 mg/l 48 hr Daphnia magna (NICNAS)
 - [Graphite] : EC50 > 100 mg/l 48 hr Daphnia magna (OECD Guideline 202 ,GLP)
 - [Aluminium] : IUCLID NOEC > 100 mg/l 48 hr Daphnia magna
 - [Copper] : LC50 0.0338 mg/l ~ 0.792 mg/l 48 hr Daphnia magna (OECD TG 202)
 - [Silicon monoxide] : LC50 95.898 mg/l 48 hr (Estimate)
- **Algae**
 - [Cobalt lithium manganese nickel oxide] : ErC50 >100 mg/l 72 hr (Pseudokirchneriella subcapitata) (NICNAS)
 - [Graphite] : ErC50 > 100 mg/l 72 hr (Pseudokirchnerella subcapitata, (OECD Guideline 201, GLP)
 - [Aluminium] : NOEC ≥ 0.052 mg/l 72 hr Selenastrum capricornutum (OECD TG 201, GLP)
 - [Copper] : NOEC 0.708 mg/l ~ 0.0376 mg/l 72 hr (Phaeodactylum tricornutum: NOEC = 0.0376 - 0.708 mg/l 72hr, OECD TG 201 Phaeodactylum tricornutum: NOEC = 5.7 µg/l, IOS 10253, GLP)
 - [Silicon monoxide] : EC50 58.352 mg/l 96 hr (Estimate)

B. Persistence and degradability

- **Persistence**
 - [Copper] : log Kow = -0.57 (Estimate)
- **Degradability**
 - Not available

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [Copper] : BCF = 5830
- **Biodegradation**
 - Not available

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them

- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- It shall be treated by incineration

B. Special precautions for disposal

- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG)

- 3481

B. Proper shipping name

- LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT (including lithium ion polymer batteries)

C. Hazard Class

- 9

D. IMDG Packing group

- II

E. Marine pollutant

- Applicable
- Applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- Air transport(IATA): Not subject to IATA regulations.
- EmS FIRE SCHEDULE : F-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-I (Flammable solids (repacking possible))

15. REGULATORY INFORMATION

A. National and/or international regulatory information

- o **POPs Management Law**
 - Not applicable
- o **Information of EU Classification**
 - * **Classification**
 - [Aluminium] : H261,H250
 - [Aluminium] : H261,H228
- o **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [Copper] : 2267.995 kg 5000 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - [Aluminium] : Applicable
 - [Copper] : Applicable
- o **Rotterdam Convention listed ingredients**
 - Not applicable
- o **Stockholm Convention listed ingredients**
 - Not applicable
- o **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION**A. Reference**

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date


- 2020-02-24

C. Revision number and Last date revised

- Not applicable

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).

	SAFETY DATA SHEET	Version: R0001.0001
	LG CHEM, 18650HD2C Lithium-Ion Battery	Date of issue: 2020-02-25
		Revision date: Not applicable
		Change List:

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1. IDENTIFICATION**A. Product name**

- LG CHEM, 18650HD2C Lithium-Ion Battery [MCCH120022B3]

B. Recommended use and restriction on use

- General use : Not available
 - Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information○ **Manufacturer information**

- Company name : LG Chem, Ltd.
 - Address : 128 Yeoui-daero, Yeongdeungpo-gu Seoul, Korea
 - Dept. : Twin Tower
 - Telephone number : 82-2-3773-1114
 - Emergency telephone number : 82-2-3773-1114
 - Fax number :
 - E-mail address :

○ **Supplier/Distributor information**

- Company name : LG Chem, Ltd.
 - Address : 128 Yeoui-daero, Yeongdeungpo-gu Seoul, Korea
 - Dept. : 소형 전지. 개발. 원통형. 개발2팀
 - Telephone number : 82-2-3773-1114
 - Emergency telephone number : 82-2-3773-1114
 - Fax number :
 - E-mail address :

2. HAZARD IDENTIFICATION**A. GHS Classification**

- Serious eye damage/irritation : Category2A
 - Carcinogenicity : Category1A
 - Specific target organ toxicity(Repeated exposure) : Category2
 - Chronic aquatic toxicity : Category1

B. GHS label elements○ **Hazard symbols**○ **Signal words**

- Danger

○ **Hazard statements**

- H319 Causes serious eye irritation
 - H350 May cause cancer
 - H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)
 - H410 Very toxic to aquatic life with long lasting effects

○ **Precautionary statements****1) Prevention**

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required.

2) Response

- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P314 Get medical advice/attention if you feel unwell.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P391 Collect spillage.

3) Storage

- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

o NFPA grade (0 ~ 4 level)

- Health : 2, Flammability : 0, Reactivity : 1

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Cobalt lithium manganese nickel oxide	-	182442-95-1	20.00 ~ 50.00
Graphite	Black lead ; Mineral carbon ; Plumbago	7782-42-5	10.00 ~ 30.00
Dimethyl carbonate	Carbonic acid, dimethyl ester ; Methyl carbonate	616-38-6	10.00 ~ 20.00
Copper	Copper concentrate ; Copper element ; Copper powder ; Copper metal ;	7440-50-8	2.00 ~ 10.00
Steel manufacture, chemicals	-	65997-19-5	6.00 ~ 6.00
Aluminium	Allbri aluminum paste and powder ; Aluminium bronze ; Aluminium flake ; Aluminum dehydrated ; Aluminum powder ; Metana ; Metana aluminum paste ; Noral aluminium ;	7429-90-5	2.00 ~ 10.00
1,1-Difluoroethene homopolymer	-	24937-79-9	1.00 ~ 5.00

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contact lenses if worn.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.
- Remove contaminated clothing, shoes and isolate.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Keep unauthorized personnel out.
- Notify your local firestation and inform the location of the fire and characteristics hazard.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Avoid inhalation of materials or combustion by-products.
- Do not approach the tank surrounded by fire until it is extinguished.
- Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Remove all sources of ignition.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.
- Disposal of waste shall be in compliance with the Wastes Control?Act
- Appropriate container for disposal of spilled material collected.
- Avoid entering to sewers or water system.
- Prevent the influx to waterways, sewers, basements or confined spaces.
- Spilled material should be treated as a potential risk of waste collected.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Wash thoroughly after handling.
- Avoid contact with incompatible materials.
- Operators should wear antistatic footwear and clothing.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Check regularly for leaks.
- Do not use damaged containers.
- Store according to current laws and regulations
- Avoid direct sunlight.
- Keep in the original container.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.
- Store away from water and sewer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- o **ACGIH TLV**
 - [Cobalt lithium manganese nickel oxide] : TWA 0.1 mg/m³, Nickel Soluble inorganic compounds
 - [Graphite] : TWA, 2 mg/m³, Respirable particulate mass
 - [Copper] : TWA, 0.2 mg/m³ (Fume, as Cu), TWA, 1 mg/m³ (Dusts and Mists, as Cu)
 - [Aluminium] : TWA, 1 mg/m³, Respirable Particulate Matter
- o **OSHA PEL**
 - [Aluminium]: 15 mg/m³ (Total dust), 5 mg/m³ (Respirable fraction)
 - [Graphite]: 15 mppcf (Graphite, Natural)/15 mg/m³ (Total dust), 5 mg/m³ (Respirable fraction)(Graphite, synthetic)
 - [Cobalt lithium manganese nickel oxide]: 1mg/m³
 - [Copper]: 0.1 mg/m³ (Fume), 1 mg/m³ (Dusts and mists)

B. Engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Individual protection measures, such as personal protective equipment

- o **Respiratory protection**
 - Respiratory protection is ranked in order from minimum to maximum.
 - Consider warning properties before use.
- o **Eye protection**
 - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- o **Hand protection**
 - Wear appropriate glove.
- o **Skin protection**
 - Wear appropriate clothing.
- o **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Other
- Color	Not available
B. Odor	Not available
C. Odor threshold	Not available

D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	Not available
N. Specific gravity(Relative density)	Not available
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	Not available

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- (Respiratory tracts)
 - Not available
- (Oral)
 - Not available
- (Eye·Skin)
 - Causes serious eye irritation

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- Acute toxicity
 - * Oral
 - Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
 - [Cobalt lithium manganese nickel oxide] : LD50 >2000 mg/kg Rat (NICNAS)
 - [Graphite] : LD50 >2000 mg/kg Rat (OECD Guideline 423 ,GLP)
 - [Dimethyl carbonate] : LD50 = 13000 mg/kg Rat
 - [Copper] : LD50 481 mg/kg Rat (OECD TG 401, GLP)
 - [Aluminium] : LD50 > 15900 mg/kg Rat (OECD TG 401)
 - * Dermal
 - Product (ATEmix) : >5000mg/kg
 - [Dimethyl carbonate] : LD50 = 5000 mg/kg Rabbit

- [Copper] : LD50 > 2000 mg/kg Rat (OECD TG 402, GLP)
- * **Inhalation**
 - Product (ATEmix) : Not available
 - [Cobalt lithium manganese nickel oxide] : 0.05 < LC50 <= 0.5 mg/L/4hr
 - [Graphite] : Dust LC50 > 2 mg/l 4 hr Rat (OECD Guideline 403, GLP) (No deaths, not classified (ECHA))
 - [Dimethyl carbonate] : LC50 = 140 mg/l 4 hr Rat
 - [Copper] : LC50 > 5.11 mg/l 4 hr Rat (OECD TG 436, GLP)
 - [Aluminium] : Dust LC50 > 0.888 mg/l 4 hr Rat (OECD TG 403, GLP)
- o **Skin corrosion/irritation**
 - Not available
- o **Serious eye damage/irritation**
 - Causes serious eye irritation
- o **Respiratory sensitization**
 - Not available
- o **Skin sensitization**
 - Not available
- o **Carcinogenicity**
 - * **IARC**
 - Not available
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - [1,1-Difluoroethene homopolymer] : A4 (Fluorides)
 - [Aluminium] : A4
 - * **NTP**
 - Not available
 - * **EU CLP**
 - Not available
- o **Germ cell mutagenicity**
 - Not available
- o **Reproductive toxicity**
 - Not available
- o **STOT-single exposure**
 - Not available
- o **STOT-repeated exposure**
 - May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)
- o **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- o **Fish**
 - [Cobalt lithium manganese nickel oxide] : LL50 >100 mg/l 96 hr Pimephales promelas (NICNAS)
 - [Graphite] : LC50 > 100 mg/l 96 hr (Danio rerio (OECD Guideline 203, GLP)
 - [Copper] : LC50 0.286 mg/l 96 hr Oncorhynchus mykiss (LC50 0.28640% sewage treatment plant effluent, 0.164river water mg/l 96hr)
- o **Crustaceans**
 - [Cobalt lithium manganese nickel oxide] : EL50 >100 mg/l 48 hr Daphnia magna (NICNAS)
 - [Graphite] : EC50 > 100 mg/l 48 hr Daphnia magna (OECD Guideline 202 ,GLP)
 - [Copper] : LC50 0.0338 mg/l ~ 0.792 mg/l 48 hr Daphnia magna (OECD TG 202)
 - [Aluminium] : IUCLID NOEC > 100 mg/l 48 hr Daphnia magna
- o **Algae**
 - [Cobalt lithium manganese nickel oxide] : ErC50 >100 mg/l 72 hr (Pseudokirchneriella subcapitata) (NICNAS)
 - [Graphite] : ErC50 > 100 mg/l 72 hr (Pseudokirchnerella subcapitata, (OECD Guideline 201, GLP)
 - [Copper] : NOEC 0.708 mg/l ~ 0.0376 mg/l 72 hr (Phaeodactylum tricorutum: NOEC = 0.0376 - 0.708 mg/l 72hr, OECD TG 201 Phaeodactylum tricorutum: NOEC = 5.7 µg/l, IOS 10253, GLP)
 - [Aluminium] : NOEC ≥ 0.052 mg/l 72 hr Selenastrum capricornutum (OECD TG 201, GLP)

B. Persistence and degradability

- **Persistence**
 - [Copper] : log Kow = -0.57 (Estimate)
- **Degradability**
 - Not available

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [Copper] : BCF = 5830
- **Biodegradation**
 - Not available

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- It shall be treated by incineration

B. Special precautions for disposal

- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG)

- 3480

B. Proper shipping name

- LITHIUM ION BATTERIES (including lithium ion polymer batteries)

C. Hazard Class

- 9

D. IMDG Packing group

- II

E. Marine pollutant

- Applicable
- Applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- Air transport(IATA): Not subject to IATA regulations.
- EmS FIRE SCHEDULE : F-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-I (Flammable solids (repacking possible))

15. REGULATORY INFORMATION

A. National and/or international regulatory information

- **POPs Management Law**
 - Not applicable
- **Information of EU Classification**
 - * **Classification**
 - [Aluminium] : H261,H250
 - [Aluminium] : H261,H228
 - [Dimethyl carbonate] : H225
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [Copper] : 2267.995 kg 5000 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - [Copper] : Applicable
 - [Aluminium] : Applicable
- **Rotterdam Convention listed ingredients**
 - Not applicable
- **Stockholm Convention listed ingredients**
 - Not applicable
- **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION

A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2020-02-25

C. Revision number and Last date revised

- Not applicable

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product Identifier

Name of Product: Rechargeable Li-ion Battery

1.2 Other means of identification

Product Models: EAC63382201

Nominal Voltage: 25.55V

Nominal capacity: 1900mAh

Nominal Power: 48.5Wh

Weight: 450g

1.3 Recommended use of the chemical and restriction on use

Recommended Use: Rechargeable Li-ion Battery

Restriction on Use: No information available

1.4 Information Of Supplier:

Company Name: TWS Technology (Guangzhou) Limited

Address: No.39 Nanyunsan Road, Science Park, Hi-Tech Industrial Development Zone,Guangzhou

Zip code: 510663

Contact person: Li Jun

Tel: 86-136-603-73234

E-mail: li.jun@tws.com

1.5 Emergency Telephone

86-20-29114223

2. Hazard(s) Identification

2.1 Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1

2.2 Label elements

2.2.1 Signal Word **Danger**

2.2.2 Hazard Statements

Causes skin irritation

Causes serious eye damage

Suspected of causing cancer

Causes damage to organs through prolonged or repeated exposure

2.2.3 Symbol



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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.

2.3 Precautionary Statements

2.3.1 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.

2.3.2 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.

2.3.3 Precautionary Statements – Storage

Store locked up

2.3.4 Precautionary Statements – Disposal

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

2.4 Hazards not otherwise classified (HNOC)

Not applicable

2.5 Unknown Toxicity

39% of the mixture consists of ingredient(s) of unknown toxicity.

2.6 Other information

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

2.7 Interactions with other chemicals

No information available.

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3. Composition/ Information on Ingredients

Chemical Name	Molecular formula	CAS No.	Weigh%
Aluminum	Al	7429-90-5	2~10%
Lithium Cobalt Oxide	LiCoO ₂	12190-79-3	25~40%
Acetylene Black	C	1333-86-4	< 5%
Copper	Cu	7440-50-8	2~10%
Carbon	C	7440-44-0	10~30%
Lithium Hexafluorophosphate	LiPF ₆	21324-40-3	10~20%
Polyvinylidene Fluoride	PVDF	24937-79-9	< 5%

4. First Aid Measures

4.1 General Advice

First aid is upon rupture of sealed battery.

4.1.1 Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub affected area. Seek immediate medical attention/advice.

4.1.2 Skin Contact

Wash off immediately with plenty of water and soap for at least 15 minutes. Remove and isolate contaminated clothing and shoes. Get medical attention if irritation develops and persists.

4.1.3 Inhalation of Vented Gas

Remove to fresh air. Get medical attention immediately if symptoms occur. If not breathing, give artificial respiration. If breathing is difficult, (trained personnel should) give oxygen.

4.1.4 Ingestion

Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

4.1.5 Self-protection of the first aider

Ensure that medical personnel are aware of the material(s) involved. Take precaution to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Use personnel protective equipment as required. Wear personnel protective clothing (see section 8).

4.2 Most important symptoms and effects, both acute and delayed

Burning sensation, Itching. Rashes. Hives, Coughing.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician

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Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization of susceptible persons. Treat symptomatically.

5. Fire –Fighting Measures

5.1 Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Dry chemical, CO₂, water spray or regular foam. Move containers from fire area if you can do it without risk.

5.2 Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient.

5.3 Specific Hazards Arising from the chemical

Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes. May cause sensitization by inhalation and skin contact. Product is or contains a sensitizer.

Hazardous Combustion products

Carbon oxides

5.4 Explosion Data

Sensitivity to Mechanical Impact :None.

Sensitivity to Static Discharge: None.

5.5 Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/IOSH (approved or equivalent) and full protective gear. Move containers from fire area if you can do it without risk.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

6.2 Environmental Precautions

Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

6.3 Methods for containment

Prevent further leakage or spillage if safe to do so. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

6.4 Methods for cleaning up

Pick up and transfer to properly labeled containers.

7. Handling and Storage

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7.1 Precaution for safe handling

In case of rupture, use personal protection equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Do not breathe dust/fume/gas/mist/vapors/spray.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. Keep out of the reach of children.

Incompatible products

Strong acids. Strong oxidizing agent. Strong bases.

8. Exposure Controls/Personal Protection

8.1 Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Lithium Cobalt Oxide 12190-79-3	TWA:0.02mg/m ³	-	-
Lithium Hexafluorophosphate 21324-40-3	TWA: 2.5 mg/m ³ F	TWA: 2.5 mg/m ³ F TWA: 2.5 mg/m ³ dust (vacated) TWA: 2.5 mg/m ³	-
Acetylene Black 1333-86-4	TWA: 3mg/m ³ Inhalable particulate matter	TWA: 3.5mg/m ³	IDLH: 1750 mg/m ³ TWA: 3.5 mg/m ³ TWA: 0.1 mg/m ³ Carbon black in presence of Polycyclic aromatic hydrocarbons PAH

ACGIH TLV: American Conference of Governmental Industrial Hygienists-Threshold Limit Value
OSHA PEL : Occupational Safety and Health Administration-Permissible Exposure Limits
NIOSH IDLH Immediately Dangerous to Life or Health.

Other Exposure Guidelines:

Vacated limits revoked by the court of Appeals decision in AFL-CLO v. OSHA, 965F, 2d 962(11th Cir., 1992) See section 15 for national exposure control parameters.

8.2 Appropriate engineering controls

Engineering Measures:

Showers, Eyewash stations, Ventilation systems

8.3 Individual protection measures, such as personal protective equipment

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.

Eye /face protection: if splashes are likely to occur: Wear safety glasses with side shields(or goggles). None required for consumer use.

Skin protection: Wear protective gloves and protective clothing. Long sleeved clothing.

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Imperious gloves.

Hygiene Measure: Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use. No information available.

9. Physical and Chemical Properties

Physical State: Solid

Color: Black

Odor: Odorless

Odor Threshold: No information available

pH: No data available

Melting/freezing point: No data available

Boiling point/boiling range: No data available

Flash Point: No data available

Evaporation Rate: No data available

Flammability (Solid, gas): No data available

Flammability Limit in Air:

Upper flammability limit: No data available

Lower flammability limit: No data available

Vapor pressure: No data available

Vapor density: No data available

Specific Gravity: No data available

Solubility: Insoluble in water

Partition coefficient:n-octanol/water: No data available

Autoignition temperature: No data available

Decomposition temperature: No data available

Kinematic viscosity: No data available

Dynamic viscosity: No data available

10. Stability and Reactivity

Reactivity:

No data available

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Chemical stability:

Stable under recommended storage conditions.

Possibility of Hazardous Reactions:

None under normal processing.

Hazardous Polymerization:

Hazardous polymerization does not occur.

Conditions to avoid:

Do not subject battery to mechanical shock. Keep away from openflames, high temperature.

Incompatible materials:

Strong acids, Strong oxidizing agents. Strong bases.

Hazardous decomposition products:

Carbon oxides

11. Toxicological Information

11.1 Information on likely routes of exposure

Product information:

Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture:

Inhalation:

Specific test data for the substance or mixture is not available. Corrosive by inhalation (based on components). Inhalation of corrosion fumes/gases may cause coughing, choking, headache, dizziness and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure and increased heart rate. Inhaled corrosion substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract.

Eye Contact:

Specific test data for the substance or mixture is not available. Cause burns. (based on components). Corrosion to the eyes and may cause severe damage including blindness. Cause serious eye damage. May cause irreversible damage to eyes.

Skin Contact:

Specific test data for the substance or mixture is not available. Corrosion (based on components). Cause burns. Toxic in contact with skin. May be absorbed through the skin in harmful amounts.

Ingestion:

Specific test data for the substance or mixture is not available. Cause burns. (based on components). Ingestion cause burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May be harmful if swallowed.

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Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Acetylene Black 1333-86-4	>15400 mg/kg (Rat)	>3g/kg(rabbit)	-

11.2 Information on toxicological effects

Symptoms:

Erythema (skin redness). May cause redness and tearing of eyes. Itching. Rashes. Hives. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Coughing and/or wheezing.

11.3 Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization: May cause sensitization of susceptible person, May cause sensitization by skin contact. May cause sensitization by inhalation.

Mutagenic Effects: No information available.

Carcinogenicity: the table below whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt oxide 12190-79-3	A3	Group 2B		X
Acetylene Black 1333-86-4	A3	Group 2B	Reasonably Anticipated	X

ACGIH (American Conference of Governmental Industrial Hygienists)

A3- Animal Carcinogen

IARC (International Agency for research on Cancer)

Group 2B- Possibly Carcinogenic to humans

NTP (National Toxicology Program) Reasonably Anticipated- reasonably anticipated to be a human Carcinogenic.

OSHA (Occupational safety and Health Administration of the US Department of Labor)

X-Present

Reproductive Toxicity: No information available.

STOT- single exposure: No information available.

STOT- repeated exposure: Cause damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE)

Chronic Toxicity: Prolonged exposure may cause chronic effects. Repeated contact may cause allergic reactions in very susceptible persons. Contain a known or suspected carcinogen. Avoid repeated exposure. May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects.

Target Organ Effects: Respiratory system. Eyes. Skin. Gastrointestinal tract(GI). Blood. Central Nervous System(CNS). Kidney. Liver. Lungs. Nasal cavities.

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Aspiration Hazard: No information available.

11.4 Numerical measures of toxicity product information

The following values are calculated based on chapter 3.1 of the GHS document.

ATE mix(oral): 5400 mg/kg

12. Ecological Information

Ecotoxicity :

Chemical name	Toxicity to Aglae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Acetylene Black 1333-86-4				24h EC50: >5600mg/L

Persistence and Degradability: No information available

Bioaccumulation: No information available

Other adverse effects: No information available

13. Disposal Considerations

13.1 Waste treatment methods

Disposal methods:

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements. Should not be released into the environment.

Contaminated Packaging:

Dispose of in accordance with federal, state and local regulations.

California Hazardous Waste Codes 141

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste
Lithium Cobalt Oxide 12190-79-3	Toxic

14. Transportation Information

The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed

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in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule)

Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "PI965-967 section II of IATA-DGR" or "special provision 188 of IMO-IMDG Code"

DOT: NOT REGULATED

Proper Shipping Name: NON REGULATED

Emergency Response Guide Number: 147

Hazard Class: N/A

TDG: Not regulated

MEX: Not regulated

ICAO: Not regulated

IATA: Not regulated

Proper Shipping Name: Not regulated

Hazard Class: Not regulated

IMDG/IMO: Not regulated

Proper Shipping Name: NON REGULATED

Hazard Class: N/A

Ems No.: F-A, S-1

RID: Not regulated

ADR: Not regulated

AND: Not regulated

15. Regulatory information

15.1 International Inventories

TSCA Complies

DSL All components are listed either on the DSL or NDSL.

TSCA – United State Toxic Substance Control Act Section 8(b) Inventory

DSL/NDSL – Canadian Domestic Substance List/Non-Domestic Substance List

15.2 US Federal Regulations

SARA 313: Section 313 of Title III of the superfund Amendments and Reauthorization Act of 1986(SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No.	Weight (%)	SARA313-Threshold
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			values(%)
Lithium Cobalt Oxide	12190-79-3	25-40	0.1

15.3 SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

15.4 CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

15.5 CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

15.6 US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Acetylene Black 1333-86-4	Carcinogen

U.S State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Lithium Cobalt Oxide 12190-79-3	x		x	x	x
Lithium Hexafluorophosphate 21324-40-3	x				
Acetylene Black 1333-86-4	x	x	x		x

15.7 International Regulations

Mexico

National occupational exposure limits

Chemical Name	Carcinogen Status	Exposure Limits
Acetylene Black		Mexico: TWA 3.5 mg/m ³ Mexico: STEL 7 mg/m ³

Canada

WHMIS Hazard Class

Non-controlled

16. Other Information

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Disclaimer:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used material used in combination with any other materials or in any process, unless specified in the test.

Prepared By: Guangzhou MCM Certification and Testing Co., Ltd.

Issuing Date: July 17, 2018

Revision Date: July 17, 2018

--- End of SDS ---