

Material Safety Data Sheet

1. Basic item

Product name Lithium ion battery (“Lithium ion battery” includes lithium polymer battery in this document)

2. Product information

Basic composition of the product

This product is a battery which consists of such main component as core battery pack assembled with some Lithium ion cells. And it consists of any combination of plastic casing, tube casing, protection circuit boards, safety devices and interface terminals.

3. Safety information

- Certifies the battery has passed and satisfied the UN Manual of Tests and Criteria Part III, sub-section 38.3 testing in Shipping.
- Manufactured the battery under the quality management program required in UN model

4. Battery pack

1. The Watt-hour rating of the battery is under than 100Wh.
2. Package of the battery satisfy the following conditions.
 - (1) The product name “Lithium ion batteries” and how to deal with the damage of the package are written on the label.
 - (2) The package has passed the drop test from the height of 1.2m.

5 The battery is not subject to the fully regulated requirements for Dangerous Goods in ocean and ground transportation.

Lenovo MSDS Finder

Last updated Oct 30, 2019

SMP
LGC
CXP

For more information, including how to locate your Lenovo FRU Part Number and what to do if your battery part number is not listed below, please visit:

Battery Part Numbers		Battery Information							supplier
Lenovo ASM Lenovo PN Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)	
5B10H45092	L14C3P60	SDS_Coslight	5B10H45092_UN38.3	3.7	11.1	36	184.8	2.97	CXP
5B10K90787	L15C2PB5	SDS_Coslight	5B10K90787_UN38.3	3.8	7.6	30	140.7	2.42	CXP
5B10K84638	L15C3PB1	SDS_Coslight	5B10K84638_UN38.3	3.8	11.4	52.95	241.5	4.14	CXP
5B10K84639	L15C2PB1	SDS_Coslight	5B10K84639_UN38.3	3.8	7.6	35.3	178.5	2.76	CXP
5B10L04162	L15C2P01	SDS_Coslight	5B10L04162_UN38.3	3.8	7.6	35	192.2	2.79	CXP
5B10K90785	L15C2PB4	SDS_Coslight	5B10K90785_UN38.3	3.8	7.6	30	141.8	2.42	CXP
5B10J40259	L15C4P71	SDS_Coslight	5B10J40259_UN38.3	3.8	7.6	41	177.5	3.20	CXP
5B10K90784	L15C2PB2	SDS_Coslight	5B10K90784_UN38.3	3.7	7.4	30	148.1	2.47	CXP
5B10K90786	L15C2PB3	SDS_Coslight	5B10K90786_UN38.3	3.7	7.4	30	146.5	2.47	CXP
5B10L13961	L15C2PB6	SDS_Coslight	5B10L13961_UN38.3	3.85	7.7	39	152.3	3.04	CXP
5B10L13960	L15C2PB7	SDS_Coslight	5B10L13960_UN38.3	3.8	7.6	30	155.4	3.04	CXP
5B10M52739	L16C4PB1	SDS_Coslight	5B10M52739_UN38.3	3.84	7.68	48	200	3.80	CXP
5B10M49821	L15C3PB1	SDS_Coslight	5B10M49821_UN38.3	3.8	11.4	52.95	226.8	4.18	CXP
5B10M50525	L15C2PB1	SDS_Coslight	5B10M50525_UN38.3	3.8	7.6	35.3	168	2.79	CXP
5B10M88059	L16C2PB1	SDS_Coslight	5B10M88059_UN38.3	3.8	7.6	35	152.3	2.79	CXP
5B10M88058	L16C2PB2	SDS_Coslight	5B10M88058_UN38.3	3.8	7.6	30	152.3	2.42	CXP
5B10N00766	L16C4PB3	SDS_Coslight	5B10N00766_UN38.3	3.84	7.68	48	200	3.80	CXP
5B10N17665	L16C4P61	SDS_Coslight	5B10N17665_UN38.3	3.84	7.68	70	283.5	5.47	CXP
5B10P35084	L17C4PB1	SDS_Coslight	5B10P35084_UN38.3	3.84	15.36	79	341.3	6.22	CXP
5B10P53997	L17C2PB1	SDS_Coslight	5B10P53997_UN38.3	3.8	7.6	30	164	2.42	CXP
5B10P54003	L17C2PB2	SDS_Coslight	5B10P54003_UN38.3	3.85	7.7	39	164	3.04	CXP
5B10P54005	L17C2PB3	SDS_Coslight	5B10P54005_UN38.3	3.8	7.6	30	167	2.42	CXP
5B10P53999	L17C2PB4	SDS_Coslight	5B10P53999_UN38.3	3.85	7.7	39	167	3.04	CXP
5B10P98182	L17C2PB5	SDS_Coslight	5B10P98182_UN38.3	3.85	7.7	39	187.5	3.04	CXP
5B10N87359	L17C3P61	SDS_Coslight	5B10N87359_UN38.3	3.84	11.52	36	153.3	2.85	CXP
SB10K97581	01AV424	SDS_Coslight	SB10K97581_UN38.3	3.8	11.4	24	137.6	1.90	CXP
SB10K97624	L17C4P71	SDS_Coslight	SB10K97624_UN38.3	3.84	15.36	54	234	4.22	CXP
SB10K97627	L17C3P53	SDS_Coslight	SB10K97627_UN38.3	3.7	11.1	45	237.3	3.71	CXP
SB10K97609	L17C3P51	SDS_Coslight	SB10K97609_UN38.3	3.7	11.1	45	225	3.71	CXP
SB10K97573	01AV416	SDS_Coslight	SB10K97573_UN38.3	3.8	15.2	32	168	4.93	CXP
5B10Q56955	L16C2PB2	SDS_Coslight	5B10Q56955_UN38.3	3.8	7.6	30	152.3	2.42	CXP
5B10Q22882	L17C4PB2	SDS_Coslight	5B10Q22882_UN38.3	3.84	11.52	34	159.6	2.67	CXP
5B10Q16067	L17C4PB0	SDS_Coslight	5B10Q16067_UN38.3	3.84	7.68	45	195.3	3.56	CXP
SB10K97613	L17C3P52	SDS_Coslight	SB10K97613_UN38.3	3.7	11.1	45	236	3.71	CXP
SB10K97619	L17C6P71	SDS_Coslight	SB10K97619_UN38.3	3.8	11.4	48	243.6	3.80	CXP
SB10K97629	L17C6P72	SDS_Coslight	SB10K97629_UN38.3	3.8	11.4	48	243.6	3.80	CXP
5B10Q39205	L15C3PB1	SDS_Coslight	5B10Q39205_UN38.3	3.8	11.4	52.95	221	4.18	CXP
5B10Q39200	L17C3P61	SDS_Coslight	5B10Q39200_UN38.3	3.84	11.52	36	146	2.85	CXP
5B10Q71252	L17C3PB0	SDS_Coslight	5B10Q71252_UN38.3	3.8	11.4	45	210	3.57	CXP
5B10Q88561	L17C3PG1	SDS_Coslight	5B10Q88561_UN38.3	3.8	11.4	52.5	216	4.18	CXP
5B10Q93738	L17C2PF1	SDS_Coslight	5B10Q93738_UN38.3	3.85	7.7	39	161	3.04	CXP
5B10Q88557	L17C3PG2	SDS_Coslight	5B10Q88557_UN38.3	3.85	11.55	57	220	4.47	CXP
5B10Q88558	L17C4PG2	SDS_Coslight	5B10Q88558_UN38.3	3.85	15.4	76.46	310	5.96	CXP
5B10Q82425	L17C4PH1	SDS_Coslight	5B10Q82425_UN38.3	3.84	7.68	60	238	4.69	CXP
5B10Q88559	L17C3PG2	SDS_Coslight	5B10Q88559_UN38.3	3.85	11.55	57	220	4.47	CXP
5B10R32748	L17C4PE1	SDS_Coslight	5B10R32748_UN38.3	3.84	15.36	42	183	3.28	CXP
5B10Q38237	L16C4PB1	SDS_Coslight	5B10Q38237_UN38.3	3.84	7.68	48	200	3.76	CXP
5B10R48675	L16C2PB2	SDS_Coslight	5B10R48675_UN38.3	3.8	7.6	30	145	2.42	CXP
SB10Q76929	L17C4P72	SDS_Coslight	SB10Q76929_UN38.3	3.84	15.36	80.4	323	6.28	CXP
SB10K97637	L17C6P51	SDS_Coslight	SB10K97637_UN38.3	3.8	11.4	99	475	7.82	CXP
5B10R38649	L17C4PF0	SDS_Coslight	5B10R38649_UN38.3	3.84	15.36	45	186	3.56	CXP
5B10R37085	L17C4PH3	SDS_Coslight	5B10R37085_UN38.3	3.84	7.68	61	260	4.68	CXP
5B10R48676	L16C2PB1	SDS_Coslight	5B10R48676_UN38.3	3.8	7.6	35	145	2.79	CXP
5B10R48675	L16C2PB2	SDS_Coslight	5B10R48675_UN38.3	3.8	7.6	30	145	2.42	CXP
SB10K97641	L18C3P51	SDS_Coslight	SB10K97641_UN38.3	3.75	11.25	42	181	3.3615	CXP

* Due to the unique cell configuration of this battery pack (hybrid battery pack with 4 cylindrical cells and 4 prismatic cells in the pack) please use both MSDS sheets referenced

Battery Part Numbers		Battery Information							
Lenovo ASM Lenovo PN Part Number	Lenovo model name	MSDS Type #	UN DOT 38.3 Test Certificate	Cell Voltage (V)	Battery Voltage (V)	Watt hour Rating (Wh)	Weight (grams)	Equivalent Lithium Content (grams)	supplier
SB10K97657	L18C6PD1	SDS_Coslight	SB10K97657_UN38.3	3.8	11.4	48	235	3.798	CXP
SB10K97663	L18C6PD2	SDS_Coslight	SB10K97663_UN38.3	3.8	11.4	48	235	3.798	CXP
SB10K97644	L18C4P71	SDS_Coslight	SB10K97644_UN38.3	3.84	15.36	51/49	218	3.99	CXP
SB10K97648	L18C3P71	SDS_Coslight	SB10K97648_UN38.3	3.84	11.52	51/49	220	3.95	CXP
SB10K97654	L18C3PD1	SDS_Coslight	SB10K97654_UN38.3	3.84	11.52	57/55	240	4.455	CXP
5B10T11586	L18C4PH0	SDS_Coslight	5B10T11586_UN38.3	3.84	7.68	60	257	4.692	CXP
5B10T30218	L17C3PG1	SDS_Coslight	5B10T30218_UN38.3	3.8	11.4	52.5	240	4.1805	CXP
5B10T31045	L17C3PG2	SDS_Coslight	5B10T31045_UN38.3	3.85	11.55	57	243	4.4685	CXP
5B10T30217	L17C3PG2	SDS_Coslight	5B10T30217_UN38.3	3.85	11.55	57	243	4.4685	CXP
5B10U65274	L19C4PD1	SDS_Coslight	5B10U65274_UN38.3	3.84	7.68	60	254.82	4.692	CXP
5B10T07385	L18C4PC0	SDS_Coslight	5B10T07385_UN38.3	3.86	7.72	52	233	4.053	CXP

* Due to the unique cell configuration of this battery pack (hybrid battery pack with 4 cylindrical cells and 4 prismatic cells in the pack) please use both MSDS sheets referenced

Celxpert Material Safety Data Sheet

[29 CFR 1910.1200]

Material Safety Data Sheet

May be used to comply with OSHA's Hazard communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

US Department of Labor

Occupational Safety and Health Administration

(Non-Mandatory Form) Form Approved

OMB No.1218-0072

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER : Celxpert Energy Co., Ltd

ADDRESS : No.128, Gong Wu Rd., Lung Tan, Taoyuan, Taiwan, 325, R.O.C.

TELEPHONE : +886-3-4899054

FAX : +886-3-4897320

Product Name : Lithium Ion Rechargeable Battery Pack

Product Detail information: Refer Table "SDS_Coslight"

SECTION 2: INGREDIENT

Battery Cell

HAZARDOUS INGREDIENTS	%	CAS NUMBER
Cobalt compound	4-50	1307-96-6
Styrene-Butadiene-Rubber	<1	27288-99-9
Aluminum Foil	2-10	7429-90-5
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Copper Foil	2-10	7440-50-8
Carbon	10-30	7440-44-0
Electrolyte (Ethylene carbonate)	10-20	96-49-1
Lithium hexafluorophosphate	<5	21324-40-3
Stainless steel, Nickel and inert materials	Remainder	N/A

Circuit Module

HAZARDOUS INGREDIENTS	%	CAS NUMBER
Lead	0.001	7439-92-1
Mercury	0	7439-97-6
Chromium	0	7440-47-3
Cadmium	0	7440-43-9

Plastic case and Si2O	0	N/A
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Plastic Parts and Paints

HAZARDOUS INGREDIENTS	%	CAS NUMBER
Lead	<0.1	7439-92-1
Nickle	<0.01	7440-02-0
CFCs	0	75-69-4
Polychlorinated Biphenyls	0	1336-36-3

SECTION 3: HAZARDS IDENTIFICATION

PROTENTIAL HEALTH EFFECTS

PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion : NO

SYMPTOMS OF EXPOSURE

Skin contact

No effect under routine handling and use.

Skin absorption

No effect under routine handling and use.

Eye contact

No effect under routine handling and use.

Inhalation

No effect under routine handling and use.

SECTION 4: FIRST AID MEASURES

INHALATION, EYE CONTACT, and SKIN CONTACT : Not a health hazard.

INGESTION

If swallowed, obtain medical attention immediately.

If exposure to internal materials within cell(pack) due to damaged outer casing, the Following actions are recommended.

INHALATION

Leave area immediately and seek medical attention.

EYE CONTACT

Rinse eyes with water for 15 minutes and seek medical attention.

SKIN CONTACT

Wash area thoroughly with soap and water and seek medical attention.

INGESTION

Drink milk/water and induce vomiting; seek medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 GENERAL HAZARD

Cell is not flammable but internal organic material will burn if the cell is incinerated.

Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

5.2 EXTINGUISHING MEDIA

Use extinguishing media suitable for the materials that are burning.

5.3 SPECIAL FIREFIGHTING INSTRUCTIONS

If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent.

5.4 FIREFIGHTING EQUIPMENT

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 ON LAND

Place material into suitable containers and call local fire/police department.

6.2 IN WATER

If possible, remove from water and call local fire/police department.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

No special protective clothing required for handling individual cells.

7.2 STORAGE

Store in a cool, dry place.

SECTION 8: EXPOSURE CONTROLS//PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

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

8.2 PERSONAL PROTECTION

Respirator: Not required during normal operations. SCBA required in the event of a fire.

Eye/face protection: Not required beyond safety practices of employer.

Gloves: Not required for handling of cells.

Foot protection: Steel toed shoes recommended for large container handling.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

State	Solid
Odor	N/A
PH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Solubility in water	Insoluble
Specific gravity	N/A
Density	N/A

SECTION 10: STABILITY AND REACTIVITY

10.1 REACTIVITY

None

10.2 INCOMPATIBILITIES

None during normal operation. Avoid exposure to heat, open flame, and corrosives.

10.3 HAZARDOUS DECOMPOSITION PRODUCTS

None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

10.4 CONDITIONS TO AVOID

Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

SECTION 11: TOXICOLOGICAL INFORMATION

This product does not elicit toxicological properties during routine handling and use.

Sensitization: NO Teratogenicity: NO Reproductive toxicity:NO Acute toxicity: NO

This product does not contain any kinds of the following substances and halogen-type flame retardants including Chlorine and Bromide type harmful flame retardants which are listed in Appendix of TCO documents and relevant international ECO requirements:

Polybromated Biphenyls (PBB)
Polybromated Diphenylethers (PBDE)
Polychlorinated Biphenyls (PCBs)
Polychlorinated Terphenyls(PCTs)
Polychlorinated Paphthalene(PCN)
Chlorinated Paraffins(C10-C13)
Chlorofluorocarbons(CFCs)
Polyvinyl Chloride(PVC)
Carbon Tetrachloride

None of the following substances will be exposed, leaked, or emitted during transportation, storage or any operation and any temperature condition:

Chlorinated Fluorohydrocarbon (FCKW)

Acrylonitrile

Styrol

Phenol

Benzol

Mercury of greater than 0.0001 wt% for alkaline battery

Mercury of greater than 0.0005 wt% for other battery

Lithium content of greater than 0.5g/battery cell

Cadmium, lead, and other harmful heavy metal

And will comply with the regulation of 49 CFR (DOT regulation), International Air Transport Association (IATA), and Deuche Forschungsgemeinschaft (DFG) regarding concentrations of emitted substances.

This product does not contain mercury and cadmium.

Mercury content: N/A

Cadmium content: N/A

If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

SECTION 12: ECOLOGICAL INFORMATION

Some materials within the cell are bio-accumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

SECTION 13: DISPOSAL CONSIDERATIONS

CALIFORNIA REGULATED DEBRIS

RCRA Waste Code: Non regulated

Dispose of according to all federal, state, and local regulations.

SECTION 14: TRANSPORT INFORMATION

- The International Civil Aviation Organization (ICAO) Technical Instructions (2019-2020 Edition).
- The International Air Transport Association (IATA) Dangerous Goods Regulations (60th Edition, 2019). Packing instruction 965 Section IA, IB or II for Lithium Ion battery.
- The International Maritime Dangerous Goods (IMDG) Code (38-16 Edition) with special provision 188 & 230.
- US Hazardous Materials Regulations 49 CFR(Code of Federal Regulations)Sections 173-185 Lithium batteries and cells.
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries, ST-SG-AC.10-11-Rev.6-Amend1 (UN3480) .

SECTION 15: OTHER INFORMATION

Package if damaged: do not load or transport.

Celxpert contact window: J.D. Chen

For more information,call 1-800-424-9300

SECTION 16: UN MANUAL OF TEST CRITERIA

All battery pack model pass UN383 test and drop test.

Item	Test Item	Test specification
T1	Altitude Simulation (UN38.3-1)	<p>1-1.4 batteries are standard charged. 4 batteries are 1C cycled 50 times, ending in fully charged state. All batteries weight is measured. The charged batteries voltage are measured and recorded.</p> <p>1-2. Batteries shall be stored at a pressure of 11.6Kpa or less for at least six hours at ambient temperature 20+/-5 °C .</p> <p>1-3. Vacuum is released. All cells weight is measured. The charged cell voltage are measured and recorded.</p>

Item	Test Item	Test specification
T2	Thermal test (UN38.3-2)	<p>2-1. Packs are stored for 6 hours at $75^{\circ}\text{C}\pm 2^{\circ}\text{C}$, followed by storage for 6 hours at $-40^{\circ}\text{C}\pm 2^{\circ}\text{C}$. The maximum time interval between test temperature extremes is 30 minutes.</p> <p>2-2. Repeat 2-1 for 10 times. Then store the packs at ambient for 24 hours. All packs weight are measured. The charged battery voltage are measured and recorded.</p>
T3	Vibration test (UN38.3-3)	<p>3-1. Packs are firmly secured to the platform of the vibration machine without distorting the packs in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of 3 mutually perpendicular to the terminal face.</p> <p>3-2. The logarithmic frequency sweep is as follows: 7-18 Hz → 1gn 18-50 Hz → 0.8mm amplitude 50-200 Hz → 8gn</p> <p>3-3. All packs weight are measured. The charged packs voltage are measured and recorded.</p>
T4	Shock test (UN38.3-4)	<p>4-1. Packs shall be secured to the testing machine by means of a rigid mount, which will support all mounting surfaces.</p> <p>4-2. Packs shall be subjected to a half-sine shock of peak acceleration 150gn and pulse duration of 6 milliseconds. Each pack shall be subjected to 3 shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicularly mounting positions of the pack for a total of 18 shocks.</p> <p>4-3. All batteries weight are measured. The charged cell voltage are measured and recorded.</p>
T5	Short Circuit Test (UN38.3-5)	<p>5-1. Packs are placed in to a $57^{\circ}\text{C}\pm 4^{\circ}\text{C}$ oven, and exterior packs temperature are monitored</p> <p>5-2. When packs exterior reach $57^{\circ}\text{C}\pm 4^{\circ}\text{C}$, they are shorted by connecting terminals with a copper wire of resistance less than 100 mOhm.</p> <p>5-3. The short was continued for more than 1hour or the cell temperature return to 57°C. The packs are observed for a further 6 hours.</p>
T6	Impact test (UN38.3-6)	<p>6-1. Cell's diameter $\geq 18\text{mm}$, Execution impact test. (A 9.1 Kg mass is to be dropped from a height of $61\pm 2.5\text{cm}$ onto the sample.)</p> <p>6-2. Cell's diameter $< 18\text{mm}$, Execution crush test (The cells are crushed with a 13 KN with the crush tester. Once the force is obtained it is to be released.)</p>
T7	Overcharge test (UN38.3-7)	<p>7-1. The charge current shall be twice the SPEC's recommended maximum continuous charge current.</p> <p>7-2. The minimum voltage of the test shall be as follows: (a) When the SPEC's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V. (b) When the SPEC's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.</p> <p>7-3. Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours.</p>

Item	Test Item	Test specification
T8	Forced discharge test-cell only (UN38.3-8)	8-1. Cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V D.C. power supply at an initial current equal to the maximum discharge current Specified by the manufacturer.

Package Drop Test
Test specification: Height :120cm.

SECTION 17: REGULATORY INFORMATION

OSHA hazard communication standard (29 CFR 1910.1200)

_____Hazardous V Non-hazardous