



PRODUCT SPECIFICATION

DOC NO.: PS-GB-278491-01

REV. : A

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ECN NO. :

Battery Specification Confirmation Sheet

电池产品规格书

ATL Product Part Number/ATL产品代码: GB-S02-278491-010H/L

Customer: LEN, PN: SB18D95067,

Model: L23D2P31

Pack Configuration/电池结构: 1Series 2parallel (1S2P)

Prepared by TPM	Approved by TPM	Approved by CPD	Approved by QA
Melon Yang			

Customer Confirmation	Authorized Signatory		Date
	Signature	Print Name	
	Company Name Of Customer:LEN		
	Company Stamp Of Customer:		

Confidential : () Level 3 Private confidential () Level 2 High confidential (V) Level 1 Low confidential

AMENDMENT RECORDS/变更记录

Revision/版本	Description/描述	Originator/制作者	Date/日期
A	New release	Melon Yang	7/21/2023

Content/目录

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1 Scope/适用范围:

The purpose of this Document (“Document”) is to specify the specifications of the Lithium-ion rechargeable battery with model **L23D2P31** (“Product” or “Pack”) to be supplied by ATL to Customer under Customer’s purchase order and ATL’s confirmation relevant to the Product. For the avoidance of doubt, the specifications specified herein do not apply to any Host Device, apparatus, instrument, equipment or hardware device containing Product or Cell (“Host Device”).

本产品规格书描述了 ATL 依据客户采购订单生产的可充电锂离子电池的产品性能指标，产品代码号 **L23D2P31** (“产品”或“电池”)。为避免疑问，本产品规格书不适用于任何包含该产品或电芯的主机设备、仪器、仪表、器件、硬件设备等 (“主机”)。

2 Model Name/型号: **L23D2P31**

3 Standard Environmental Test Conditions/标准环境测试条件:

3.1 Unless otherwise specified, all tests stated in this Product Specification are conducted at below conditions:

除非特别指定，本产品规格书所有的测试遵循如下条件:

Temperature/温度: $23 \pm 2^{\circ}\text{C}$ (“Temperature Condition” /温度条件)

Humidity/湿度: $65 \pm 20\% \text{ RH}$ (“Humidity Condition” /湿度条件)

3.2 Throughout this Document, numeric criteria annotated by “*” means such criteria are only applicable to fresh unused Product within 30 days from manufacture by ATL. Products either have been used or stored for a period longer than 30 days by Customer and/or its customer may exhibit an inferior numeric parameter than such criteria. Customer agrees that such occurrence does not constitute nonconformance of specification.

本产品规格书中，所有标有“*”的项目是指仅适用于“未使用的且从ATL制造日起30天内的产品”。如果产品已被客户使用或存储时间超过30天，可能表现出低于标准规格，客户同意并接受产品不构成不符合规格。

4 Detailed Specifications/详细规格:

The specifications listed in this Section 4 shall be the detailed specifications for the Product (“Detailed Specifications”). 列在第 4 部分的规格作为产品的详细规格。

No.	Items/项目	Specifications/规格	Remark/备注
4.1	*Rated Capacity ($C_{\min}$) /最小容量	6820mAh/26.7Wh	Standard capacity measure method: 1364mA CC (constant current) charge to 4.5V, then CV (constant voltage 4.5V) charge till charge current decline to 341mA, then with 1364mA discharge to 3.0V cut-off 标准容量测试方法: 先用1364mA恒流充电至 4.5V, 再恒压充电直至充电电流 $\leq 341\text{mA}$, 然后用1364mA放电至3.0V
4.2	Typical Capacity/ 典型容量	7040mAh/27.6Wh	
4.3	*Typical Voltage/ 典型电压	3.91V	
4.4	Charge Cutoff Voltage/ 充电截止电压	4.5V	
4.5	Voltage at end discharge/ 放电截止电压	3.0V	
4.6	Charge/Discharge 充电/放电	Cell Surface Temperature 电芯表面温度	Charge Current and Voltage 充电电流和电压
	Charge/充电	$0^{\circ}\text{C} \sim 15^{\circ}\text{C}$	Method 1(Normal For MP): 方式一 (Normal用于量产):



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			1364mA CC to 4.5V, CV to 341mA 1364mA 充电到4.5V, 然后CV到341mA Method 2 (FFC For MP): 方式二 (FFC用于量产): 1364mA CC to 4.515V, CV to 0.076Cmin(518.32mA) 1364mA 充电到 4.515V, 然后 CV 到 0.076Cmin(518.32mA)
		15°C~45°C	Method 1(Normal For MP): 方式一 (Normal用于量产): 6A CC to 4.5V, CV to 341mA 6A 充电到4.5V,然后CV到341mA Method 2 (FFC For MP): 方式二 (FFC用于量产): 6A CC to 4.515V,CV to 0.124Cmin(845.68mA) 6A 充电到 4.515V, 然后 CV 到 0.124Cmin(845.68mA)
		45°C ~50°C	3410mA CC to 4.2V, CV to 341mA 3410mA 充电到 4.2V ,然后 CV 到 341mA
	Discharge/放电	-20°C ~60°C	6A Max DC to 3.0 V 6A Max 放电到 3.0 V
4.7	Storage Condition/ 存贮条件	Temperature/温度: within 3 months/3个月内 -20°C ~ + 45°C; over three months/超过3个月 25±3°C; Humidity/湿度: ≤75%RH	The battery voltage should be kept in the range of 3.6V to 3.95V by charging batteries if batteries are stored more than 3 months/电池存储超过 3 个月需要给电池充电维持电压在 3.6V to 3.95 V
4.8	*Initial resistance 初始内阻	60mΩ Max	Internal resistance measured at AC 1KHz after charge to shipment voltage. 充电到出货电压后, 测量其 AC 1KHz 下的交流阻抗
4.9	*Pack Voltage(as of shipment) 电池电压 (出货状态)	NA	Non air transport/非空运
		3.73~3.81V	Air transport (IATA require shipping SOC≤30%)/空运 (IATA 要求出货 SOC ≤30%)
4.10	*RT Cycle life/常温循环寿命 (25°C±3°C)	Charge Cell with charge method specified in the Detailed Specifications, and discharge cell with 3410mA discharging current until battery voltage reaches 3.0V. Repeat to 1000cycles, record remained capacity of 1000th cycle.	> 80%of min

4.11	Pack Weight/电池重量	99g	
4.12	Pack Dimension/	168.1mm(L)*98mm(W)*2.75mm(T 30% SOC)	Max

5 Warranty period/保质期:

The warranty period of Battery is 12Monthsafter the manufacture date.
电池保质期为从生产日期算起12个月。



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6.2 Battery Barcode Drawing/电池喷码图纸

Lenovo

型号/型號/Model/Model Baterai:L23D2P31

可充式锂离子电池组/可充式鋰離子電池組

Rechargeable Li-ion Battery/Baterai isi ulang Li-ion

标称电压/標稱電壓/Nominal Voltage/Tegangan nominal: 3.91VDC

充电限制电压/Limited Charge Voltage/Batas tegangan pengisian: 4.5VDC

额定容量/額定電容量/Rated Capacity/Kapasitas baterai: 6820mAh/26.7Wh

典型电容量/Typical Capacity: 7040mAh/27.6Wh

1ICP3/84/91-2

For use with Lenovo personal computer Perhatian: Lihat petunjuk penggunaan/Gunakan pengisi daya asli

警告：禁止拆解、撞击、挤压或投入火中。若出现严重鼓胀，请勿继续使用。请勿置于高温环境中。电池浸水后禁止使用！

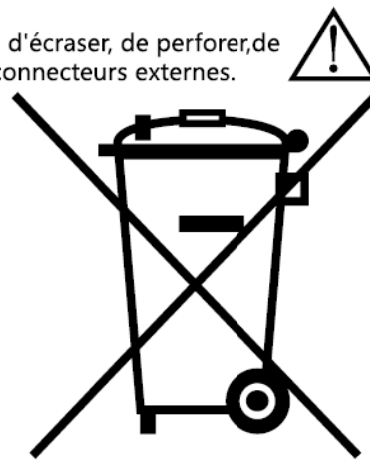
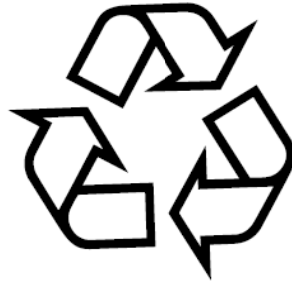
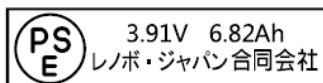
Warning: Do not disassemble, puncture, crush, heat, or burn.

AVERTISSEMENT!

Pour réduire le risque d'incendie ou de brûlures, abstenez-vous de démonter, d'écraser, de perforer, de jeter dans l'eau ou dans le feu une batterie, ou encore de court-circuiter ses connecteurs externes.

中国制造/中國製造/Made in China/Buatan China 执行标准: GB31241-2022

生产厂:东莞新能德科技有限公司 MFR:Ningde Ampere Technology Limited



US & Canada Only



XXXXXXXX-XXXXX
모델명 L23D2P31
전지의종류 리튬이온 2차전지
제조사명 Ningde Ampere Technology Limited
수입자명 한국레노버
제조국명 중국(China)
A/S 연락처 1670-0088



Li-ion 00

使用後はリサイクルへ

R3E316



TIS 2217-2548
Lenovo (Thailand) Limited



Date : 20230510

8SSB18D95067CADG35A0001



廢電池請回收 額定能量: 26.7Wh



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二维条码规则说明如下 (QR Code, Size: 6x6±0.5mm) :



Date : 20230510

8SSB18D95067CADG35A0001

二维码明码规则：

第一行：Date：20230510

Date：-----固定值；

2023-----制造年份；

05-----制造月份；

10-----制造日期；

第二行：8SSB18D95067CADG35A0001 (与暗码内容一致)

第1~2位：固定值 "8S"

第3~12位："SB18D95067" 产品料号 (10位物料
号为固定不变；)

第13位：电芯代码为C，为固定值，

第14~16位：供应商代码为ADG,为固定值，表示新能源，

第17位：年份 (年份取最后一位数字)

第18位：月份 (1~9月按数字1到9表示，10月用A表
示，11月用B表示，12月用C表示)

第19位：日期 (1~9日按数字1到9表示，10~31日按
字母A.....Z表示，I,O,Q,U除外)

第20~23位：四位生产流水号4位系列号，可以为数字
或字母，可由我司自行定义，数字按16
进制来安排。

二维码暗码规则：

二维码扫描显示为：8SSB18D95067CADG35A0001

第1~2位：固定值 "8S"

第3~12位："SB18D95067" 产品料号 (10位物料
号为固定不变；)

第13位：电芯代码为C，为固定值，

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第17位：年份 (年份取最后一位数字)

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示，11月用B表示，12月用C表示)

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第20~23位：四位生产流水号4位系列号，可以为数字
或字母，可由我司自行定义，数字按16
进制来安排。



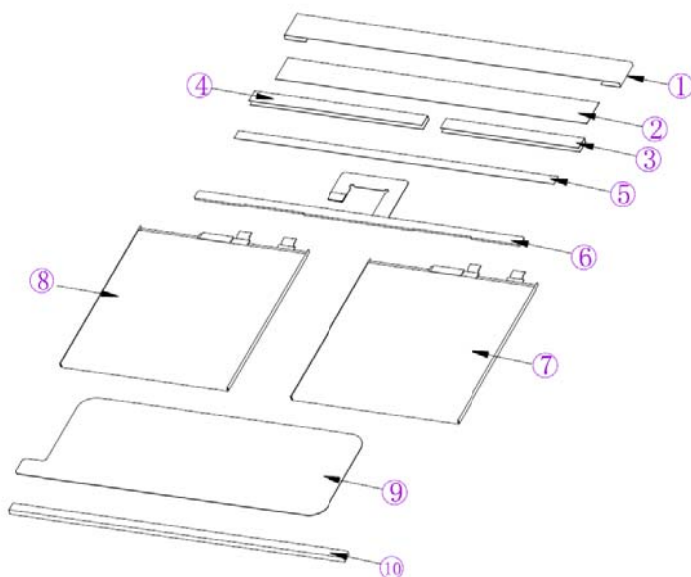
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6.4 Disassembly Drawing for Pack/电池拆分图



Item/项目	Specification/规格	Qty/数量	Remark/备注
Mylar-1	PI;T0.05mm;Tawny;One side gum;VTM-0 or V-0;M-010;RoHS+REACH+HF	1PCS	1
Mylar-2	PI; T0.05mm;Tawny;One side gum;VTM-0 or V-0;M-010;RoHS+REACH+HF	1PCS	2
Mylar-3	PI; T0.05mm;Tawny;One side gum;VTM-0 or V-0;M-010;RoHS+REACH+HF	1PCS	3
Mylar-4	PI; T0.05mm;Tawny;One side gum;VTM-0 or V-0;M-010;RoHS+REACH+HF	1PCS	4
Mylar-5	PI; T0.05mm;Black;One side gum;VTM-0 or V-0;M-006;RoHS+REACH+HF	1PCS	5
PCBA	PCBA; Master board;REV01,RoHS+REACH+HF	1PCS	6
Cell	ATL,278491	1PCS	7
Cell	ATL,278491	1PCS	8
PET	PET; T0.1mm;Transparent;RoHS+REACH+HF	1PCS	9
Mylar-6	PI; T0.05mm;Tawny;One side gum;VTM-0 or V-0;M-006;RoHS+REACH+HF	1PCS	10



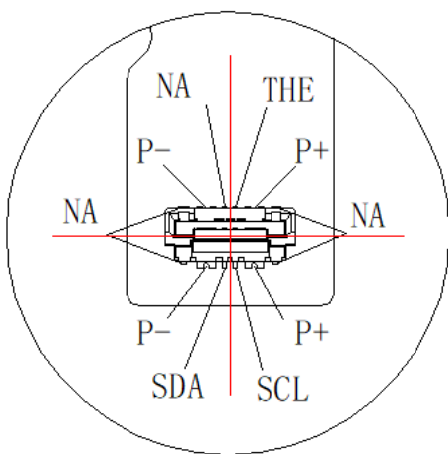
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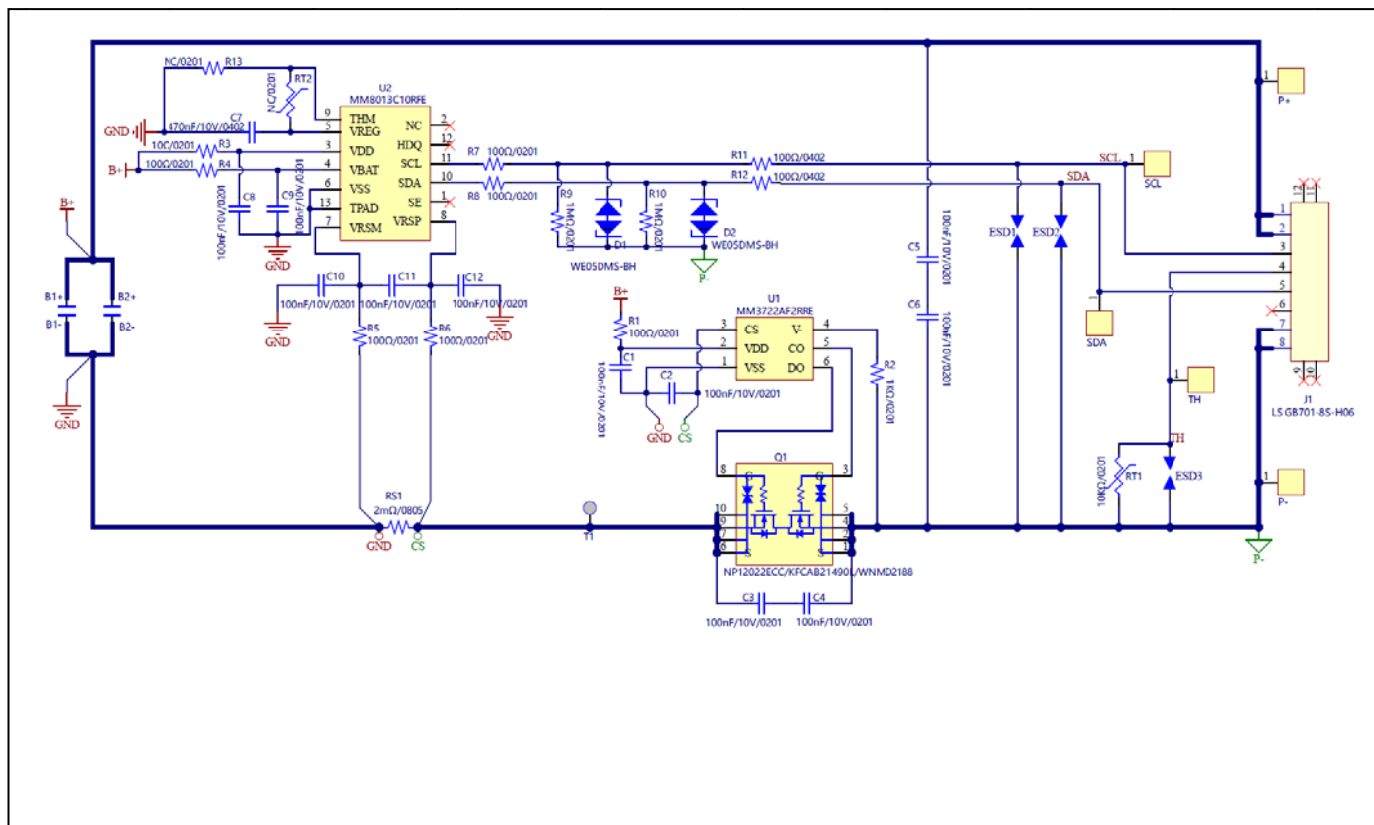
7 Terminal Specification/引脚定义



Name/ 名称	Pin No./ 引脚编号	Function/功能	Remark/ 备注
P+		Battery positive terminal for charge & discharge/电池正端用于充电和放电	
P-		Battery negative terminal for charge & discharge/电池负端用于充电和放电	
SCL		Terminal for I ² C Clock /I ² C 时钟线	
SDA		Terminal for I ² C Data /I ² C 数据线	
THE		NTC terminal connect to P-/热敏电阻感应端，连接到 P- (10KΩ±1%,B=3435K±1%)	
NA		No connection/无连接	

8 PCM Specifications/保护板规格

8.1 Circuit diagram/电路图





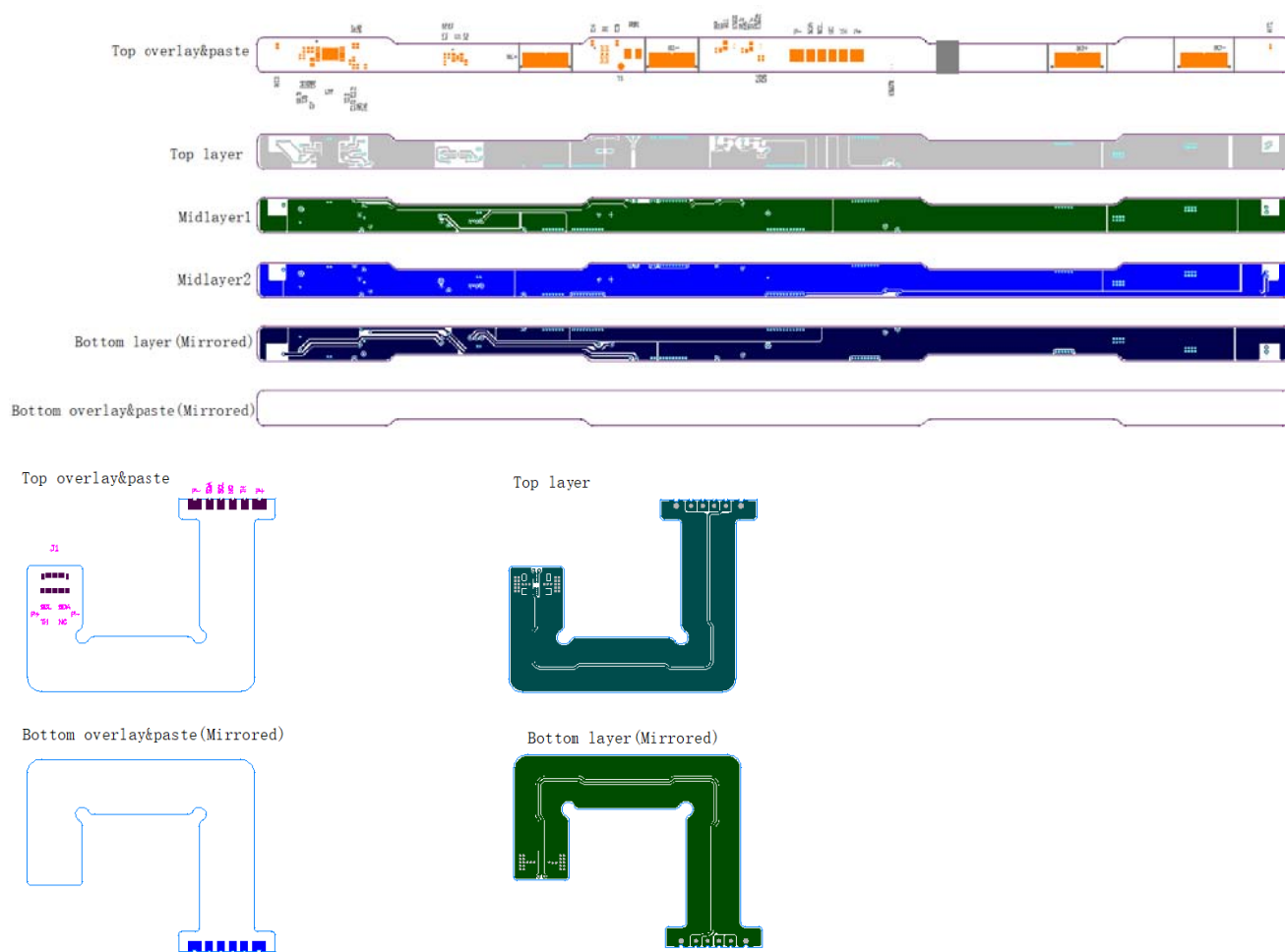
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8.2 PCM and FPC Layout/保护板和FPC布局



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8.3 PCM Part list/保护板清单

NO 序号	Parts name 部件名称	Symbol 标志	Description 描述	Qty 数量	Manufacturer 制造商	Footprint 封装
1	PCB		L163×W5.5×T1mm;FR-4;4Layers;V-0	1	TBD	
2	FPC		L36.2×W28.1×T0.17mm;PI;2Layers;V-0	1	TBD	
3	Connector	J1	GB701-8S-H06	1	LS	8P
4	IC	U1	MM3722AF2RRE	1	MITSUMI	SSON-6J/ SSON-6M
5	Gauge IC	U2	MM8013C10RFE	1	MITSUMI	PLP-12A
6	MOS	Q1	NP12022ECC	1	Powercore	CSP
			KFCAB21490L		Nuvoton	TCSP153 0011-N2
			WNMD2188-10/TR		WILL	CSP-10L
7	Sampling resistor	RS1	2mR±1%;1/2W	1	Walter,RALEC	0805
8	Nickel	B1+,B1-,B2+,B2-	L1×L2×H×T=7×2.5×2.5×0.13mm	4	Songzhi,Tianjun	L shape
9	TVS	D1,D2	WE05DMS-BH_W033010168B	2	Wayon	DFN0603-2L
10	Resistor	R1,R4,R5,R6,R7,R8	100R±5%;1/20W	6	YAGEO, TA-I	0201
11	Resistor	R2	1K±5%;1/20W	1	YAGEO, TA-I	0201
12	Resistor	R3	10R±5%;1/20W	1	YAGEO, TA-I	0201
13	Resistor	R9,R10	1M±1%;1/20W	2	YAGEO, TA-I	0201
14	Resistor	R11,R12	100R±1%;1/16W	2	YAGEO, TA-I	0402
15	NTC	RT1	10K±1%;B(25/85℃)=3435K±1%	1	TDK	0201
16	Capacitor	C1,C2,C3,C4,C5,C6,C8,C9,C10,C11,C12	100nF±10%;10V;X5R	11	MURATA, YAGEO,SAMSUNG,VIIYONG	0201
17	Capacitor	C7	470nF±10%;10V;X5R	1	YAGEO,SAMSUNG	0402

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8.4 PCM Parameter/保护板参数

Ta=-20℃~60℃

No 序号	Items 条目		Min. 最小值	Typ. 典型值	Max. 最大值
1	overcharge protection voltage (V) 过充保护电压 (V)		4.555	4.580	4.605
2	overcharge protection delay time(s) 过充保护延迟时间 (s)		0.72	1.02	1.33
3	overcharge protection release voltage (V) 过充保护恢复电压 (V)		4.430	4.480	4.530
4	overdischarge protection voltage (V) 过放保护电压 (V)		2.760	2.800	2.840
5	overdischarge protection delay time (ms) 过放保护延迟时间 (ms)		67.2	96.0	124.8
6	overdischarge protection release voltage (V) 过放保护恢复电压 (V)		2.930	3.000	3.095
7	chargeovercurrent detection voltage(mV) 充电过流检测电压 (mV)		18.7	22.0	25.3
8	charge overcurrent protection (A) 充电过流保护 (A)		9.08	11.00	13.04
9	charge overcurrent protection delay time(ms) 充电过流保护延迟时间 (ms)		5.6	8.0	10.4
10	dischargeovercurrent detection voltage(mV) 放电过流检测电压 (mV)		18.7	22.0	25.3
11	dischargeovercurrent protection (A) 放电过流保护 (A)		9.08	11.00	13.04
12	discharge overcurrent protection delay time(ms) 放电过流保护延迟时间 (ms)		16.8	24.0	31.2
13	short circuit protection detection current(A) 短路保护检测电流 (A)		23.88	30.00	36.49
14	short circuit protection delay time(us) 短路保护延迟时间 (us)		150	300	600
15	PCB current consumption (uA) PCB 电流消耗 (uA)	operating mode 工作模式	-	33.6	64
		Shutdown mode 关机模式 (VDD≤2.4V,delay≥8s)	-	0.66	1.6
16	PCM impedance (mΩ) PCM 内阻(mΩ)		TBD	TBD	TBD
17	PCB impedance (mΩ) PCB 内阻(mΩ)		-	TBD	TBD
18	FPC impedance (mΩ) FPC 内阻(mΩ)		-	TBD	TBD
19	NTC thermistor value (kΩ) NTC 电阻值(kΩ)	B(25/85)=3435K±1%	9.9	10	10.1
20	NTC temperature tolerance (°C) NTC 温度公差	±3	T-3	T	T+3



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10 Appendix Handling Precautions and Guidelines for Lithium-ion Rechargeable Batteries:

附录锂离子充电电池操作指示及注意事项

Foreword/前言

These *Handling Precautions and Guidelines for Lithium-ion Rechargeable Batteries* shall apply to the Product.

本文件《锂离子充电电池操作指示及注意事项》仅适用于新能源科技有限公司生产的电池。

Statement (1):

Customer is requested to contact ATL in advance, if and when the customer needs other applications or operating conditions than those described in this document. Additional experimentation may be required to verify performance and safety under such conditions.

声明 (1): 客户若需要将电池用于超出文件规定以外的设备,或在文件规定以外的使用条件下使用电池应事先联系 ATL, 因为需要进行特定的实验测试以核实电芯在该使用条件下的性能及安全性。

Statement (2):

ATL will take no responsibility for any accident when the Product is used under other conditions than those described in this Document.

声明 (2): 对于在超出文件规定以外的条件下使用电池而造成的任何意外事故, ATL 概不负责。

- Use specified charge/discharge conditions/使用指定的充放电条件。
- Specified product use only/仅用于指定产品。
- Do not immerse in water pour/禁止投入水中。
- Do not heat or throw in fire/禁止加热或投入火中。
- Do not attempt to crush or drop/禁止尝试挤压或跌落。
- Do not attempt to modify/禁止任何修改。
- Leave in cool places/存放在阴凉处。
- Do not put it in microwave oven, oven or pressure container/禁止放在微波炉, 炉子或压力容器里。
- Do not use battery if not recover during conditions above/假如在上述条件下电池不能恢复请不要继续使用。
- During assembly, charging, normal use and storage of battery pack, such as change of color, mechanical are detected do not use/在组装, 充电, 正常使用和存储中, 如有变色或机械损伤, 请不要继续使用。
- In case of leakage or smells remove from thermal conditions, Also wash off with clean water/万一有漏液或气味, 要从热源移除, 并且用清水清洗干净。
- Do not place or leave the battery and equipment in the reach of infants so that they are not able to swallow or mistreat the battery by mistake. In case of ingestion, consult with a doctor immediately/请将电池放在幼儿不宜触碰的地方, 以免吞食和误处理。万一发生请立即就医。
- Do not let leaked electrolyte come into contact with eyes or skin. In such a case, immediately wash the area of contact with clean water and seek help from a doctor. If not treated soon, prolonged contact may cause serious injury/漏出的电解液远离眼睛和皮肤, 万一发生立即清洗干净或就医, 假如不能立即处理, 可能引起严重伤害。
- Do not put the battery into a fire. Do not use it or leave it in a place near fire, heaters, or high temperature sources. In such a case, the insulator in the battery may be melted, the safety vent and structure may be damaged, or the electrolyte may catch fire, all of which may cause heat generation, explosion, or fire/不要将电池丢入火中。不要在离火源, 热源或高温源近的地方使用或放置。在这种情况下, 电池中的绝缘保护可能融化, 安全阀等结构可能会被毁坏, 这样可能会过热, 爆炸或起火。
- Do not submerge the battery in water, or wet the battery. If the protecting device assembled in the battery is damaged, the battery may be charged with an abnormal current and voltage and may cause a chemical reaction within the battery, which may result in the cause of heat generation, explosion, or fire of the battery/禁止浸泡或弄湿电池, 如果电池保护装置被损坏, 电池可能会被异常电流和电压充电从而引起电池内化学变化, 导致过热, 爆炸或起火。



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- Do not use any battery charger not specified. Incorrect charging method and charging equipment, the battery will be damaged, which may cause firing, or other problems/禁止使用非指定充电器，错误的充电方法和充电设备，可能损坏电池，导致起火或其它安全问题。
- Do not use, charge, or leave the battery near fire or in a car under the blazing sun. Such a high temperature may cause damage of the protecting device in the battery, which may result in an abnormal reaction, and then heat generation, explosion, or fire/禁止离火源很近的位置或烈日下的车中放置，使用或给电池充电，这种高温环境下可能毁坏电池中的保护机构，从而引起异常反应，发热，爆炸和起火。
- Do not connect the battery reversed in positive (+) and negative (-) terminals in the charger or equipment. In the case the battery is connected in reverse, it is charged reversibly and may cause heat generation, explosion, or fire due to an abnormal chemical reaction/禁止反接电池正负极，在这种情况下，电池被异常充电可能会导致过热，爆炸或起火。
- Do not short terminals. Do not let the battery terminals (+ and -) contact a wire or any metal (like a metal necklace or a hairpin) with which it carried or stored together. In such a case, the battery is shorted and causes an excessive current, which may result in heat generation, explosion, or fire/禁止短接，禁止直接用导线或任何金属（比如金属项链或发卡）连接电池正负极。这种情况下，电池外短路引起过电流，有可能导致过热，爆炸或起火。
- Do not connect the battery directly to an electric outlet or cigarette heater socket in car. With a high voltage applied, the battery may overheat, explode, or cause fire/车上禁止直接连接到电源插座和点烟器上，因为高压下，电池可能会过热，爆炸，或起火。
- Do not throw or drop the battery. Strong impact may damage the protecting device, which may cause an abnormal chemical reaction during its charge and result in heat generation, explosion, or fire of the battery/禁止抛扔或跌落电池，强的重力冲击可能破坏保护机构，可能引起异常化学反应导致发热，爆炸或起火。
- Do not drive a nail in, hit with a hammer, or stamp on the battery. In such a case, the battery may be deformed and shorted, which may cause heat generation, explosion, or fire of the battery/禁止针刺，砸锤或邮戳电池，这种情况下，电池可能变形和短路，从而导致过热，爆炸，起火。
- Do not solder the battery directly. Heat applied during soldering may damage the insulator of the safety vent and mechanism, which may result in heat generation, explosion, or fire of the battery/禁止锡焊电池，可能破坏安全阀，以及机构的绝缘保护措施，导致过热，爆炸，起火。
- Do not disassemble or alter the battery. The battery employs a safety mechanism and a protecting device in order to avoid any danger. If these are damaged, heat, explosion or fire may be caused/禁止拆解或更换电池，电池安置了安全机构和保护机构避免安全隐患，假如损坏，可能导致过热，爆炸或起火。
- Do not put the battery in a microwave oven or a pressure cooker. Sudden heat may damage the seal of the battery and may cause heat generation, explosion, or fire of the battery/禁止将电池放在微波炉或压力锅内，极速的热可能导致过热，爆炸或起火。
- Do not leave the battery in a charger or equipment if it generates an odor and/or heat, changes color and / or shape, leaks electrolyte, or causes any other abnormality. In such a case, immediately take the battery out of the charge or equipment and keep it away from fire, otherwise, the battery might overheat, explode, or cause fire/如果电池已经发出气味或发热，颜色和/或外形有变化，电解液露出或任何不正常的现象，请不要再将电池放到充电器或设备里。这种情况下，应立刻将电池从充电器或设备中取出并远离火源，否则电池可能过热，爆炸或起火。
- Discontinue charging after specified charging time even if the charge is not complete, otherwise, the battery might cause heat generation, explosion, or fire/规定时间内不能完成充电不要继续充电，否则可能导致过热，爆炸或起火。
- Do not use the battery in the place where the static electricity (more than the limit of the manufacturer's guarantee) occurs. Otherwise, the protecting device in the battery might be damaged and cause heat generation, explosion, or fire/禁止将电池搁置在超出制造商定义的静电区，否则保护机构可能损坏导致过热，爆炸或起火。
- Do not use the battery in other than the conditions specified; otherwise, the battery might cause heat generation, damage, or deterioration of its performance/禁止在超出规定条件下使用电池，否则可能导致过热，损坏，恶化



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电池电性能。

- Read the instructions of your equipment regarding the battery installation and removal from the equipment so as not to mishandle and waste the battery/阅读设备和电池关于安装和拆卸指导书，避免误操作导致浪费。
- In case young children use the battery, instruct them on the contents of the instructions and ensure the battery is correctly used by them at all times/如果小孩使用电池，务必指导他们正确操作，确保电池正确使用。
- The battery was manufactured and inspected carefully before shipment to conform with the specification. However, in the case any abnormality of bad smell or heat, etc. arises after purchase, bring the battery back to the retail shop where you bought it/电池制造和出厂前检查是满足本规格的，万一购买后发现像气味，热等任何异常，去购买处退回处理。
- The battery was charged a little before shipment for temporary use by an end user. In case your equipment does not operate with the battery or in the case of a long use, charge the battery with a specified charger once/出厂前电池充了一点电，购买后使用不能工作或使用一段时间后，需要规定的充电器充电。
- Do not charge the battery over the specified time described in the instructions, otherwise, the battery performance might deteriorate/禁止用超出规格书规定的充电时间，否则可能恶化电池电性能。
- Turn off your equipment power switch after use, otherwise, the performance of the battery might deteriorate/设备使用后请关掉电源，否则可能恶化电池电性能。
- The battery after long storage might not be sufficiently charged for use/电池长期存储不用可能导致电量不足。
- Prolonged standing or storage, PACK must be stored after removal from the host (disconnect the electrical properties of contacts); PACK need to conduct a test at least once in half of year. If necessary, the PACK needs to supplement electricity. PACK shall be kept for at least 40% capacity after a path to storage.
- 长时间搁置或储存，电池必须从主机上拆卸下储存（断开电子器件的接触）；电池至少在半年需要进行测试一次，如有必要，电池需要补充电力，保持至少 40%的容量。
- If the PACK cannot removed from the host , the PACK need to be set to the lowest power consumption mode before the storage, and arrangements the PACK supplementary charge regularly and performance testing according the Consumption rate (recommendation: supplementary charge to 60 - 70% every two months), adjustment depending on the system actual storage conditions and power consumption. With Smart-Gauge products, it is strongly recommended to set Shipping Mode of the PACK after storage.
- 如果电池无法从主机上拆卸，电池需要被设置为最低功耗模式存储，并安排定期补充电和性能测试，根据自耗电率（建议：每 2 个月补充电至 60-70%），根据系统的实际存储条件和耗电调整。带有智能电量计的产品，强烈建议储存设置为电池出货模式。
- In the case the battery terminals are dirty, clean the terminals with a dry cloth before use, otherwise, the contact with equipment might cause insufficiency, and power failure or charge failure/万一电池金手指脏污，请清洁干净后使用，否则连接设备后可能引起一些异常，甚至可能导致电源或充电失效。
- Despite being rechargeable, the battery has a limited life span, Replace when usage time between charges becomes short/尽管可充电，电池有极限使用寿命，当满充后使用时间明显变短需要更换电池。
- Keep the handling instructions and your equipment instructions in a suitable place for future reference/确保操作指导书和设备指导书在合适的位置为进一步参考。

11. Disclaimer/免责声明

11.1 The Customer hereby agrees that it has carefully read and understand any and all terms and conditions, safety precautions and measures set forth in this Document, furthermore, the Customer agrees to bear full responsibilities of these risks and responsible for any accidents, injury to persons, or property damage that may occur, Customer further agrees to waive claiming any liability against ATL.

客户在此确认并同意，其已认真阅读并理解本产品规格书中所阐明的条款、所有安全规范及措施，并且将完全地对可能因此产生的任何意外事故、人身伤害及财产损失等风险承担责任而不会向 ATL 主张任何责任。

11.2 The Product is produced and supplied to Customer with B2B nature, and is not for direct consumer use. Customer



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should verify the fitness for a particular purpose of such Product described hereof under certain application. Except as provided in the Specifications, ATL makes no representation or warranty of any kind, whether express or implied, including with respect to any warranty as to merchantability, compatibility, fitness for use or for any particular purpose. The parameters provided in this Document may vary in different applications and performance may vary from time to time. All operating parameters, including typical parameters, must be validated for each customer application by the Customer's technical experts.

本产品是基于企业对企业(B2B)的交易模式所向客户制造及供应, 非供终端消费者之直接使用。客户应当验证本规格书定义的产品在客户特定终端(或应用)满足特定用途的适用性。除规格书中有明确规定的情况外, ATL 不作任何明示或暗示的陈述或保证, 包括关于适销性、兼容性、适用性或任何特定目的的任何保证。本产品规格书中提供的参数在不同的应用中可能会有所不同, 并且性能可能随时间而变化。客户的技术专家必须就每次应用对所有操作参数(包括典型参数)进行验证。

11.3 The parties agree that ATL shall have no liability or obligation with respect to any infringement, claim or action which is based upon:

双方同意对于下列的侵权、索赔或诉讼, ATL 无须承担任何责任:

11.3.1 ATL's incorporation or use of materials, designs, technology or intellectual property designed, designated or instructed by Customer, its affiliates, contract manufacturers, customer, or end user into the products;

ATL 在其产品上结合或使用客户、客户之关联方、分包方、客户或终端用户的设计、指定或指示的材料、设计、技术或知识产权;

11.3.2 the combination, assembly, operation, or use of the products with materials, devices, parts, or software not supplied by ATL;

客户将 ATL 的产品与非 ATL 提供的材料、设备、组件或软件进行结合、组装使用/运行;

11.3.3 modifications, disassembly, repair, and rework to the products made by Customer or any third party without the prior written consent of ATL;

未经 ATL 授权(包括甲方或其他第三人)而对 ATL 的产品进行的修改、拆解、维修或重工;

11.3.4 ATL's modification of the products in compliance with the design, specification, requirements, or instructions of Customer;

ATL 依照客户的设计、规格、要求或指示而对其产品进行的修改;

11.3.5 the claim or action arising from non-compliance with the requirements for use, storage, delivery, assembly, and disposal of the products designated by ATL;

客户或任何第三方未依据 ATL 指定的产品使用方式对 ATL 的产品进行使用或未按照 ATL 指定的标准对产品进行安置、贮存、运输、组装或处理而导致的任何侵权或索赔事项;

11.3.6 use of the products outside the scope of intended use under this Document; or

客户或任何第三方未依据本产品规格书中约定的使用范围对 ATL 的产品进行使用; 或

11.3.7 any defect that may exist before ATL's product enters the market or any defect that is unable to be detected by the existing technology at the time ATL's product enters market.

ATL 未投入流通的产品或 ATL 产品在投入流通时引起损害发生的缺陷尚不存在或投入流通时的技术水平尚不能发现缺陷的存在的。

11.4 ATL shall have no liability or obligation with respect to any Products which have been subjected to abuse, misuse, improper use, negligence, accident, alteration, repair or rework performed by any unauthorized persons or entities other than ATL.

对于任何未经授权的个人或非 ATL 实体滥用, 滥用, 不当使用, 疏忽, 意外, 改动, 修理或返工的产品, ATL 概不承担任何责任或义务。

11.5 Neither party shall be liable for any indirect, special, incidental, punitive or consequential damages of any kind (including lost profits), regardless of the form of action, whether in contract, tort (including negligence), strict liability or otherwise, even if informed of the possibility of such damages in advance.

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即便对方已提前通知一方下述损失发生的可能性，双方同意并确认，任何一方均不对任何间接的、特别的、附带的、惩罚性的或结果性的损失（包括可得利益损失）承担赔偿责任，无论是基于任何诉讼方式、无论是基于合同或侵权之债（包含过失侵权行为）、无论是否基于严格责任。

11.6 The maximum overall liability of each party, alone or in the aggregate with respect to all claims of any kind, if any, whether in contract, tort (including negligence), strict or product liability, damages, reimburse, indemnification or otherwise, shall not exceed two times of the goods price allocable to the specific Product upon which the claim is directly based.

任一方所应承担的全部责任，无论是基于合同、侵权（包括过失）、严格责任或产品责任、损害、补偿、赔偿或其他任何原因，单次及累计金额应不超过引发该索赔的特定产品的货款的两倍。

12. Miscellaneous/其他

In the event of any conflict, ambiguity or discrepancy between the Chinese version and English version of this Document, both parties agree that the Chinese version of this Document shall prevail.

本产品规格书之中文文本与英文文本如有任何矛盾，歧义或者不一致之处，双方同意应以中文文本优先适用。

SAFETY DATA SHEET

Date of issue 08-2-2023

Canada/English

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Rechargeable Li-ion Battery L23D2P31

Other means of identification

Recommended use of the chemical and restrictions on use

Recommended Use LITHIUM ION BATTERIES

Uses advised against No information available

Details of the supplier of the safety data sheet

Initial supplier identifier Sunwoda Electronic Co., Ltd.

Address Floor 1,A,B,D District of Floor 2 and Floor 3 to 9 of Comprehensive Building, No.2 Yihe Road, Shilong Community, Shiyan Street, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

Telephone 0755-29516888

E-mail xiangjing@sunwoda.com

Emergency telephone number

Company Emergency Phone Number 0755-29516888

2. HAZARDS IDENTIFICATION

Classification

This is a battery. In case of rupture:

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

GHS Label elements, including precautionary statements

Danger

Hazard statements

This is a battery. In case of rupture:.

Causes skin irritation

Causes serious eye irritation

Suspected of causing cancer

Causes damage to organs through prolonged or repeated exposure



Precautionary Statements - Prevention

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood Wear protective gloves/protective clothing/eye protection/face protection Wash face, hands and any exposed skin thoroughly after handling

Do not breathe dust/fume/gas/mist/vapors/spray Do not eat, drink or smoke when using this product

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Specific treatment (see supplemental first aid instructions on this label)

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention

Skin

IF ON SKIN: Wash with plenty of water and soap

If skin irritation occurs: Get medical advice/attention Take off contaminated clothing and wash it before reuse

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other information

Very toxic to aquatic life with long lasting effects

Unknown acute toxicity

30.9 % of the mixture consists of ingredient(s) of unknown toxicity

30.9 % of the mixture consists of ingredient(s) of unknown acute oral toxicity

30.9 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable. .

Mixture

Chemical name	CAS-No	Percent(%) Max	Hazardous Information Act registry number (HMIRA registry #)	Material Review number	Date HMIRA filed and date exemption granted (if applicable)
Lithium Cobalt Oxide (CoLiO ₂)	12190-79-3	46.12%			
Graphite	7782-42-5	25.4%	-		-
Copper	7440-50-8	11.77%	-		-
Aluminum	7429-90-5	6.95%	-		-
Phosphate(1-), hexafluoro-, lithium	21324-40-3	4.67%	-		-
1,1-Difluoroethylene polymer	24937-79-9	2.1%	-		-
1,3-Propane sultone	1120-71-4	1.9%	-		-
Styrene-Butadiene polymer	9003-55-8	1.09%	-		-

4. FIRST AID MEASURES

First aid measures

General advice	First aid is upon rupture of sealed battery. IF exposed or concerned: Get medical advice/attention. Show this safety data sheet to the doctor in attendance.
Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur.
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. Get medical attention if irritation develops and persists. Do not rub affected area.
Skin contact	Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.
Self-protection of the first aider	Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms	Burning sensation.
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Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	CAUTION: Use of water spray when fighting fire may be inefficient.
Specific hazards arising from the chemical	No information available
Hazardous Combustion Products	Carbon oxides.
Explosion Data	
Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.
Special protective equipment for	Firefighters should wear self-contained breathing apparatus and full firefighting turnout

fire-fighters

gear. Use personal protection equipment

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits The following ingredients are the only ingredients of the product above the cut-off level (or level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure limits from the sources listed here.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ₃	-	TWA: 0.02 mg/m ³
Copper 7440-50-8	TWA: 0.2 mg/m ₃ fume	TWA: 0.1 mg/m ₃ fume TWA: 1 mg/m ₃ dust and mist (vacated) TWA: 0.1 mg/m ₃ Cu dust, fume, mist	IDLH: 100 mg/m ₃ dust, fume and mist TWA: 1 mg/m ₃ dust and mist TWA: 0.1 mg/m ₃ fume

Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable particulate matter	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust(vacated) TWA: 5 mg/m ³ respirable fraction	TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m ³ F	TWA: 2.5 mg/m ³ F (vacated) TWA: 2.5 mg/m ³	IDLH: 250 mg/m ³ F

Chemical name	Alberta	British Columbia	Ontario TWAEV	Quebec
Lithium Cobalt Oxide (CoLiO ₂) 12190-79-3	TWA: 0.02 mg/m ³	TWA: 0.02 mg/m ³	TWA: 0.02 mg/m ³	TWA: 0.02 mg/m ³
Copper 7440-50-8	TWA: 0.2 mg/m ³ TWA: 1 mg/m ³	TWA: 1 mg/m ³ TWA: 0.2 mg/m ³	TWA: 0.2 mg/m ³ TWA: 1 mg/m ³	TWA: 0.2 mg/m ³ TWA: 1 mg/m ³
Aluminum 7429-90-5	TWA: 10 mg/m ³	TWA: 1.0 mg/m ³	TWA: 1 mg/m ³	TWA: 10 mg/m ³

Other Exposure Guidelines

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering controls

Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection

If splashes are likely to occur, wear safety glasses with side-shields.

Hand protection

Wear suitable gloves. Impervious gloves.

Skin and body protection

Wear suitable protective clothing. Long sleeved clothing.

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.

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes or clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical state	Solid
Appearance	Black
Odor	Odorless
Color	No information available
Odor Threshold	Not applicable

<u>Property</u>	<u>Values</u>	<u>Remarks Method</u>
pH	No data available	None known
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	No data available	None known

Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability limit	No data available	
Lower flammability limit	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	No data available	None known
Water Solubility	Insoluble in water	
Solubility(ies)	No data available	None known
Partition coefficient: n-octanol/water ¹		
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	
Kinematic viscosity	No data available	
Dynamic viscosity		
<u>Other Information</u>		
Explosive properties	No information available.	
Oxidizing properties	No information available.	
Softening Point	No information available.	
Molecular Weight	No information available	
VOC Content (%)	No information available	
Liquid Density	No information available	
Bulk Density	No information available	
Particle Size	No information available	
Particle Size Distribution	No information available	

10. STABILITY AND REACTIVITY

Reactivity	No information available.
Chemical stability	Stable under normal conditions.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous Polymerization	Hazardous polymerization does not occur.
Conditions to avoid	None known based on information supplied.
Incompatible materials	Strong acids. Strong bases. Strong oxidizing agents.
Hazardous Decomposition Products	Carbonoxides.

11. TOXICOLOGICAL INFORMATION

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. May cause irritation of respiratory tract.
Eye contact	Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). Irritating to eyes.
Skin contact	Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).
Ingestion	Specific test data for the substance or mixture is not available. Ingestion may cause

gastrointestinal irritation, nausea, vomiting and diarrhea.

Information on toxicological effects

Symptoms Redness. Burning. May cause blindness. Coughing and/ or wheezing

Numerical measures of toxicity

Acute Toxicity

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

ATEmix (oral) 12,452.00 mg/kg

ATEmix (dermal) 9,132.00 mg/kg

Unknown acute toxicity 30.9 % of the mixture consists of ingredient(s) of unknown toxicity

30.9 % of the mixture consists of ingredient(s) of unknown acute oral toxicity

30.9 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Lithium Cobalt Oxide	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rat)	> 5.05 mg/L (Rat) 4 h
Copper	-	-	> 5.11 mg/L (Rat) 4 h
Aluminum	-	-	> 0.888 mg/L (Rat) 4 h

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

Skin corrosion/irritation Classification based on data available for ingredients. Irritating to skin.

Serious eye damage/eye irritation Classification based on data available for ingredients. Irritating to eyes.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Classification based on data available for ingredients. Contains a known or suspected carcinogen.

Legend

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 Carcinogen

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 Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Chemical name	Algae/aquatic plants	Toxicity to Fish	Toxicity to Microorganism	Crustacea
Copper foil	96h EC50: 0.031 - 0.054 mg/L(Pseudokirchneriella subcapitata) 72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata)	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L(Pimephales promelas)	No data available	48h EC50: = 0.03 mg/L (Daphnia magna)

Persistence and Degradability No information available.

Bioaccumulation No information available

Mobility No information available.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products	Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging	Do not reuse empty containers.

14. TRANSPORT INFORMATION

Note:	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 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 "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code"
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<u>TDG</u>	Not regulated
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<u>DOT</u>	NOT REGULATED
Proper Shipping Name	NON-REGULATED
Hazard Class	N/A
Emergency Response Guide Number	147

<u>MEX</u>	Not regulated
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<u>ICAO</u>	Not regulated
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<u>IATA</u>	
UN-No.	UN3480
Proper Shipping Name	LITHIUM ION BATTERIES
Hazard Class	9
ERG Code	12FZ
Description	Lithium Battery Mark, Class 9 lithium battery hazard label, Cargo Aircraft Only Label.

<u>IMDG/IMO</u>	Not regulated
Hazard Class	N/A
EmS-No.	F-A, S-I

<u>RID</u>	Not regulated
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<u>ADR</u>	Not regulated
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<u>ADN</u>	Not regulated
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15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Regulations

Ozone-depleting substances (ODS)	Not applicable
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Persistent Organic Pollutants Not applicable

Export Notification requirements Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status.
DSL/NDL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AICS	Contact supplier for inventory compliance status.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

<u>NFPA</u>	Health hazards 1	Flammability 0	Instability 0	Physical and Chemical Properties -
<u>HMIS</u>	Health hazards 0	Flammability 0	Physical hazards 0	Personal Protection X

Prepared By Shenzhen Precise Testing Technology Co., Ltd.

Issuing Date 07-08-2023

Revision Note No information available

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 a 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 in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet

Inhalation Statement	dust
Not Hazardous	This is a battery. In case of rupture:
Hazard statements	Causes damage to organs through prolonged or repeated exposure
Signal word	Danger
Precautionary Statements	P302 + P352 - IF ON SKIN: Wash with plenty of water and soap P321 - Specific treatment (see supplemental first aid instructions on this label) P332 + P313 - If skin irritation occurs: Get medical advice/attention P362 + P364 - Take off contaminated clothing and wash it before reuse P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P337 + P313 - If eye irritation persists: Get medical advice/attention P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood P280 - Wear protective gloves/protective clothing/eye protection/face protection P308 + P313 - IF exposed or concerned: Get medical advice/attention P405 - Store locked up P260 - Do not breathe dust/fume/gas/mist/vapors/spray P264 - Wash face, hands and any exposed skin thoroughly after handling P270 - Do not eat, drink or smoke when using this product P314 - Get medical advice/attention if you feel unwell P501 - Dispose of contents/ container to an approved waste disposal plant
Signal word	Danger
Skin corrosion/irritation	Category 2

Hazard statements	Causes skin irritation
Signal word	Warning
Serious eye damage/eye irritation	Category 2A
Hazard statements	Causes serious eye irritation
Signal word	Warning
Carcinogenicity	Category 2
Hazard statements	Suspected of causing cancer
Signal word	Warning
Specific target organ toxicity (repeated exposure)	Category 1
Skin corrosion/irritation	- (H315)
Serious eye damage/eye irritation	- (H319)
Carcinogenicity	- (H351)
STOT - repeated exposure	- (H372)
STOT - repeated exposure	

Graphic



Graphic



Graphic



Hazard statements	Causes skin irritation Causes serious eye irritation Suspected of causing cancer Causes damage to organs through prolonged or repeated exposure
Hazard statements	H315 - Causes skin irritation H319 - Causes serious eye irritation H351 - Suspected of causing cancer H351 - Suspected of causing cancer H372 - Causes damage to organs through prolonged or repeated exposure H372 - Causes damage to organs through prolonged or repeated exposure
Precautionary Statements - EU (§28, 1272/2008)	P103 - Read label before use P280 - Wear face protection P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish P234 - Keep only in original container P303 - IF ON SKIN (or hair):
Precautionary Statements	IF ON SKIN: Wash with plenty of water and soap IF ON SKIN: Wash with plenty of water and soap If skin irritation occurs: Get medical advice/attention If skin irritation occurs: Get medical advice/attention Take off contaminated clothing And wash it before reuse Take off contaminated clothing and wash it before reuse Take off contaminated clothing and wash it before reuse IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention If eye irritation persists: Get medical advice/attention Obtain special instructions before use Obtain special instructions before use Do not handle until all safety precautions have been read and understood Do not handle until all safety precautions have been read and understood Wear protective gloves Wear protective gloves IF exposed or concerned: Get medical advice/attention IF exposed or concerned: Get medical advice/attention Store locked up Do not breathe dust/fume/gas/mist/vapors/spray Do not breathe dust/fume/gas/mist/vapors/spray Do not breathe dust/fume/gas/mist/vapors/spray Do not eat, drink or smoke when using this product Do not eat, drink or smoke when using this product Get medical advice/attention if you feel unwell Get medical advice/attention if you feel unwell
Skin	IF ON SKIN: Wash with plenty of water and soap If skin irritation occurs: Get medical advice/attention Take off contaminated clothing and wash it before reuse

Precautionary Statements	P302 + P352 - IF ON SKIN: Wash with plenty of water and soap P321 - Specific treatment (see supplemental first aid instructions on this label) P332 + P313 - If skin irritation occurs: Get medical advice/attention P362 + P364 - Take off contaminated clothing and wash it before reuse P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P337 + P313 - If eye irritation persists: Get medical advice/attention P201 - Obtain special instructions before use P202 - Do not handle until all safety precautions have been read and understood P280 - Wear protective gloves/protective clothing/eye protection/face protection P308 + P313 - IF exposed or concerned: Get medical advice/attention P405 - Store locked up P260 - Do not breathe dust/fume/gas/mist/vapors/spray P264 - Wash face, hands and any exposed skin thoroughly after handling P270 - Do not eat, drink or smoke when using this product P314 - Get medical advice/attention if you feel unwell P501 - Dispose of contents/ container to an approved waste disposal plant
Precautionary Statements - Prevention	Obtain special instructions before use Do not handle until all safety precautions have been read and understood Wear protective gloves/protective clothing/eye protection/face protection Wash face, hands and any exposed skin thoroughly after handling Do not breathe dust/fume/gas/mist/vapors/spray Do not eat, drink or smoke when using this product
Precautionary Statements - Response	IF exposed or concerned: Get medical advice/attention Specific treatment (see supplemental first aid instructions on this label)
Eyes	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention
Skin	IF ON SKIN: Wash with plenty of water and soap If skin irritation occurs: Get medical advice/attention Take off contaminated clothing and wash it before reuse
Precautionary Statements - Storage	Store locked up
Precautionary Statements - Disposal	Dispose of contents/container to an approved waste disposal plant
The following values are calculated based on chapter 3.1 of the GHS document	
ATEmix (oral)	12,452.00
Units	mg/kg
ATEmix (dermal)	9,132.00
Units	mg/kg
Contains Carbon black, Phosphate(1-), hexafluoro-, lithium	
Unknown acute toxicity	90.77 % of the mixture consists of component(s) of unknown hazards to the aquatic environment
Unknown Acute Aquatic Toxicity	90.77
Unknown Chronic Aquatic Toxicity	90.77
Product ATE Oral Status	1
Product ATE Dermal Status	1
Product ATE Inhalation - Gas Status	1
Product ATE Inhalation - Vapor Status	1
Product ATE Inhalation - Dust/Mist Status	1
Product Skin Corrosion Status	1
Product Eye Damage Status	1
Product Respiratory Sens. Status	1
Product Skin Sensitization Status	1
Product Mutagenic Status	1
Product Carcinogenic Status	1
Product Reproductive Toxicity Status	1
Product STOT Single Status	1
Product STOT Repeated Status	1
Product Aquatic Toxicity Status	1
Product Aspiration Toxicity Status	1
Product Ozone Status	1
Product and Component Overall	1
Classification Status	
STOT - repeated exposure	- (H372)
Unknown acute toxicity	30.9 % of the mixture consists of ingredient(s) of unknown toxicity
	30.9 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
	30.9 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
	30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
	30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
	30.9 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)
Symbols/Pictograms	
Symbols/Pictograms	
Other hazards	Very toxic to aquatic life with long lasting effects
Health hazards	Skull and Crossbones
Health hazards	Exclamation mark
Inhalation Statement	dust
Health hazards	1