No.: RZUN2023-4536-DS1

材料安全数据表

Material Safety Data Sheet

样 品 名 称：	可充电锂离子电池组
Name of Sample:	Rechargeable Li-ion Battery Pack
委 托 单 位：	昌信（青岛）传动系统有限公司
Commissioner：	TIYA DRIVE SYSTEMS CO., LTD.

威凯检测技术有限公司

CVC Testing Technology Co., Ltd.

检验检测专用章

材料安全数据表

Material Safety Data Sheet

1. 化学品及企业标识 Chemical product and company identification	
样品名称 Name of Sample	可充电锂离子电池组 Rechargeable Li-ion Battery Pack
样品型号 Type/Model	LB4020 40V 2Ah 80Wh
委托单位 Commissioned by	昌信（青岛）传动系统有限公司 TIYA DRIVE SYSTEMS CO., LTD.
委托单位地址 Commissioner address	山东省青岛市黄岛区飞宇路 888 号 NO.888 Feiyu Road, Huangdao District, Qingdao City, Shandong Province
制造商 Manufacturer	宁波三叶工具有限公司 Ningbo Sayeah Tools CO.,LTD.
制造商地址 Manufacturer address	浙江省宁波市海曙区洞桥镇洞北路 50 号 No.50 Dongbei road Dongqiao industrial Zone,haishu District,Ningbo 315157 China
鉴定依据 Inspection according to	《关于危险货物运输的建议书 规章范本》 Recommendations on the Transport of Dangerous Goods, Model Regulations
应急电话 Emergency telephone call	**13777081568**
-	接样日期： 2023-10-17 Receiving date: 签发日期： 2024-01-11 Date of issue: Seal of CVC

Approved by: Huang Kun Reviewed by: Zhang Siyao Tested by: Liu Zhen

批 准： 审 核： 检 测：

2. 成分/组成信息 Composition information			
化学名称 Common Chemical Name	化学式 Chemical Formula	CAS 号 CAS No.	重量含量 Wt %
镍钴锰酸锂 Nickel cobalt manganese lithium oxide	-	182442-95-1	41
石墨 Graphite	C	7782-42-5	22
电解液(六氟磷酸锂) Electrolyte(Lithium hexafluorophosphate)	F_6LiP	21324-40-3	16
铜箔 Copper	Cu	7440-50-8	11
铝箔 Aluminium	Al	7429-90-5	5
隔膜(聚乙烯) Dissepiment (polyethylene)	$(C_2H_4)_n$	9002-88-4	1
粘结剂(聚偏氟乙烯树脂) Binder(PVDF)	$(C_2H_2F_2)_x$	24937-79-9	1
粘结剂(羧甲基纤维素) Binder(Carboxymethyl cellulose)	$C_2H_4O_3$.xNa.xUnspecified	9004-32-4	1
粘结剂(丁苯橡胶(1500 型) Binder(Styrene-butadiene rubber1500)	$C_{12}H_{14}$	9003-55-8	1
导电剂(炭黑) Conductive agent (Carbon Black)	C	1333-86-4	1

3. 危险性概述 Hazards identification	
爆炸危险性 Explosive risk	该物品不属于爆炸危险品 This article does not belong to the explosion dangerous goods
易燃危险性 Flammable risk	该物品不属于易燃危险品 This article does not belong to the flammable material
氧化危险性 Oxidation risk	该物品不属于氧化危险品 This article does not belong to the oxidation of dangerous goods
毒害危险性 Toxic risk	该物品不属于毒害危险品 This article does not belong to the toxic dangerous goods
放射危险性	该物品不属于放射危险品

Radioactive risk	This article does not belong to the radiation of dangerous goods
腐蚀危险性 Mordant risk	该物品不属于腐蚀危险品 This article does not belong to the corrosion of dangerous goods
其他危险性 other risk	该电池瓦时率为 80Wh，属于锂离子电池。 The watt-hour rate of the battery is 80Wh,which belong to the Lithium-ion batteries.

4. 急救措施
First aid measures

电池外壳破裂，内容物接触人体会产生危害，一旦发生接触，应采取以下应急措施：

Once battery shell rupture, content contact with the human body will produce harm, once contact, should take the following emergency measures:

眼睛：万一接触，立即用大量的清水冲洗至少 15 分钟，翻起上下眼睑，直到化学的残留物消失为止，迅速就医。

Eye:

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

皮肤：万一接触，用大量水冲洗至少 15 分钟，同时除去污染的衣物和鞋子，迅速就医。

Skin:

Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

吸入：立即从暴露处移至空气清新处，如果呼吸困难给予输氧，立即就医。

Inhalation:

Remove from exposure and move to fresh air immediately. Use oxygen if available.

食入：饮用两杯牛奶或水。如果当事人仍然清晰可以采取催吐的方法，并且立即就医。

Ingestion:

Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician

5. 消防措施
Fire-fighting measures

燃点：不适用

Flash Point: N/A.

自燃温度：不适用

Auto-Ignition Temperature: N/A.

灭火介质：大量水（降温），二氧化碳

Extinguishing Media: Water, CO_2.

特殊灭火程序：自给式呼吸器

Special Fire-Fighting Procedures

Self-contained breathing apparatus.

异常火灾或爆炸：当电芯暴露于过热的环境中时，安全阀可能会打开。

Unusual Fire and Explosion Hazards

Cell may vent when subjected to excessive heat-exposing battery contents.

燃烧产生的危险物品：一氧化碳，二氧化碳，锂氧化物烟气

Hazardous Combustion Products

Carbon monoxide, carbon dioxide, lithium oxide fumes.

6. 泄露应急处理
Accidental release measures

为防止电池材料泄露或释放采取的措施

如果电池内部材料泄露，操作人员应立刻撤离事故区直到烟气消散。将通风设备打开吹散危险性气体。用抹布擦净试验区，清除溢出的液体，将泄露电池放进塑料袋中，然后放进钢制容器。避免皮肤和眼睛接触或吸入有害气体。

Steps to be taken in case Material is Released or Spilled

If the battery material is released, remove operators from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

废弃物处置方法

建议将电池完全放电，锂金属电池消耗完电池内部的金属锂，并且交付给专业机构处理。

Waste Disposal Method

It is recommended to discharge the battery to the end. Use up the metal lithium inside the lithium metal battery, and delivered to professional institutions for further treatment.

7. 操作处置和储存
Handling and storage

禁止打开、毁坏或焚烧电池，因为电池有可能在这些处理过程中发生爆炸、破裂或泄露等事故。禁止将电池短路、过充、强制放电或扔入火中。禁止挤压刺穿电池或将电池浸入溶液中。

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

操作处置和储存中的防范措施

禁止物理或电滥用，禁止高温储存，最好将电池储存在阴凉、干燥、通风及温度变化较小的环境中。禁止将电池接触加热设备或将电池直接暴露于阳光中。

Precautions to be taken in handling and storing

Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

其他要注意的防范措施

拆解、挤压、直接放入火中或高温条件下，电池可能发生爆炸和燃烧。禁止短接或将电池正负极错误的安装在设备中。

Other Precautions

The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

8. 接触控制/个人防护
Exposure controls/personal protection

呼吸防护：

当电池排气阀打开时，应尽量使通风设备开至最大，避免将打开排气阀的电芯局限在某一狭窄空间内。正常操作条件下，呼吸保护是不必要的。

Respiratory Protection

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

通风条件

正常使用条件下不必考虑。

Ventilation

Not necessary under conditions of normal use.

防护手套

正常使用条件下不必考虑。

Protective Gloves

Not necessary under conditions of normal use.

其他防护服装或设备

正常使用条件下不必考虑。

Other Protective Clothing or Equipment

Not necessary under conditions of normal use.

电池开阀试验时应做好个人防护

呼吸防护，防护手套，防护服装和有护边的安全玻璃罩都是要准备的。

Personal Protection is recommended for venting battery

Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

9. 物理和化学特性
Physical and chemical properties

外形： 不规则形状

Appearance: Irregular shape

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气味： 泄漏时，有醚的气味。

Odour: If leaking, smells of medical ether.

酸碱度：不适用

pH: Not applicable as supplied.

闪点：针对单个组分暴露情况，其他不适用。

Flash Point: Not applicable unless individual components exposed.

易燃度：针对单个组分暴露情况，其他不适用。

Flammability: Not applicable unless individual components exposed.

相对密度：针对单个组分暴露情况，其他不适用。

Relative density: Not applicable unless individual components exposed.

溶解性（水溶性）：针对单个组分暴露情况，其他不适用。

Solubility (water): Not applicable unless individual components exposed.

溶解性（其他）：针对单个组分暴露情况，其他不适用。

Solubility (other): Not applicable unless individual components exposed.

10. 稳定性和反应活性
Stability and reactivity

稳定性：产品在第 7 节所述的条件下稳定。

Stability: Product is stable under conditions described in Section 7.

应避免的条件：加热 70°C 以上或焚烧、变形、毁坏、粉碎、拆卸、过充电、短路，长时间暴露在潮湿的条件下。

Conditions to Avoid : Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble. Overcharge. Short circuit. Expose over a long period to humid conditions.

应避免的材料：氧化剂，碱，水。

Materials to avoid: Oxidising agents, alkalis, water.

危险分解物：有毒烟雾，并可能形成过氧化物。

Hazardous Decomposition Products : Toxic Fumes, and may form peroxides.

聚合危害：不适用

Hazardous Polymerization : N/A.

如果发生泄露，避免与强氧化剂，无机酸，强碱，卤代烃接触。

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

11. 毒理学资料
Toxicological information

标志及症状：无，除非电池破裂。

Signs & symptoms: None, unless battery ruptures.

内部物质暴露的情况下，蒸汽烟雾可能对眼睛和皮肤有刺激性。

In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.

吸入：对肺有刺激性。

Inhalation: Lung irritant.

皮肤接触：对皮肤刺激性。

Skin contact: Skin irritant.

眼睛接触：对眼睛有刺激性。

Eye contact: Eye irritant

食入：吞下中毒。

Ingestion: Poisoning if swallowed.

下列情况下会危险人员身体健康：如果与电池内部材料直接接触，皮肤可能会出现干燥、灼烧等轻微或严重的刺激，并且损坏靶器官的神经，肝脏和肾脏。

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target organs nerves, liver and kidneys.

12. 生态学资料
Ecological information

对哺乳动物的影响：目前未知。
Mammalian effects: None known at present.
生态毒性：目前未知。
Eco-toxicity: None known at present.
生物体内积累：慢慢地生物降解。
Bioaccumulation potential: Slowly Bio-degradable.
环境危害：目前没有已知的环境危害。
Environmental fate: None known environmental hazards at present.

13. 废弃处置
Disposal consideration

禁止焚烧，或使电池温度超过 70°C，这种滥用可导致泄漏和/或电池爆炸。应按照相应的地方性法规处理。
Do not incinerate, or subject cells to temperature in excess of 70°C, Such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

14. 运输信息
Transport information

运输标签：锂电池标记
Label for conveyance: Lithium Battery Mark
UN 编号：UN3480
UN Number: UN3480
包装等级：不适用
Packaging Group: N/A
EmS 编号：F-A ,S-I
EmS No: F-A ,S-I
海洋污染物：无
Marine pollutant: No
正确的装运名称：锂离子电池（包括锂离子聚合物电池）
Proper Shipping name: Lithium-ion batteries (Including lithium-ion polymer batteries)
危害分类：货物应符合《国际海运危险货物规则》特殊规定 188（Amdt. 41-22）（2022 年版），《欧洲道路危险货物国际运输协议》特殊规定 188（2023 年版），包括通过 UN38.3 测试手册要求。
Hazard Classification: The goods should be complied with Special provision 188 of IMDG CODE (Amdt. 41-22）(2022 Edition), Special provision 188 of ADR 2023, including the passing of the UN38.3 test.
运输标签：锂电池标记
Label for conveyance: Lithium Battery Mark
UN 编号：UN3481
UN Number: UN3481
包装等级：不适用
Packaging Group: N/A
EmS 编号：F-A ,S-I
EmS No: F-A ,S-I

海洋污染物：无
Marine pollutant: No
正确的装运名称：安装在设备中的锂离子电池（包括锂离子聚合物电池）
Proper Shipping name: Lithium-ion batteries contained in equipment (Including lithium-ion polymer batteries)
危害分类：货物应符合《国际海运危险货物规则》特殊规定 188（Amdt. 41-22）（2022 年版），《欧洲道路危险货物国际运输协议》特殊规定 188（2023 年版），包括通过 UN38.3 测试手册要求。
Hazard Classification: The goods should be complied with Special provision 188 of IMDG CODE (Amdt. 41-22）(2022 Edition), Special provision 188 of ADR 2023, including the passing of the UN38.3 test.

15. 法规信息
Regulation information

法律信息
Law information
《危险品规则》
《Dangerous Goods Regulations》
《关于危险货物运输的建议书 规章范本》
《Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations》
《国际海运危险货物规则》
《INTERNATIONAL MARITIME DANGEROUS GOODS CODE》
《危险货物品名表》
《List of dangerous goods》
《国际公路运输危险货物协定》
《Agreement concerning the International Carriage of Dangerous Goods by Road》
《危险物品安全航空运输技术细则》
《Technical Instructions for the Safe Transport of Dangerous Goods by Air》
《危险货物分类和品名编号》
《Classification and code of dangerous goods》
《职业安全卫生法》
《Occupational Safety and Health Act》(OSHA)
《有毒物质控制法》
《Toxic Substance Control Act》(TSCA)
《消费产品安全法》
《Consumer Product Safety Act》(CPSA)
《联邦环境污染控制法》
《Federal Environmental Pollution Control Act》(FEPCA)
《石油污染法案》
《The Oil Pollution Act》(OPA)
《超级基金修正案和再授权法案III(302/311/312/313)》
《Superfund Amendments and Reauthorization Act TitleIII (302/311/312/313)》(SARA)
《资源保护及恢复法案》
《Resource Conservation and Recovery Act》(RCRA)
《安全饮用水法》
《Safety Drinking Water Act》(CWA)
《加州 65 提案》
《California Proposition 65》

《美国联邦法规》
《Code of Federal Regulations》(CFR)
根据所有联邦、州和地方法律。
In accordance with all Federal, State and local laws.

16. 其他信息
Other information

本文件仅对由委托方昌信（青岛）传动系统有限公司提供的，并由宁波三叶工具有限公司生产的电池（LB4020）有效。该电池的成分信息由委托方提供并承诺其完整性和准确性。用户应仔细阅读此文件，并按照正确的方法使用电池，如因电池使用不当造成的损害或损失，威凯检测技术有限公司（CVC）不承担任何责任。

This file is only effective to the batteries（LB4020） provided by commissioner TIYA DRIVE SYSTEMS CO., LTD., which manufactured by Ningbo Sayeah Tools CO.,LTD.. The commissioner provides the composition information of batteries, and promises its integrity and accuracy. Users should read this file carefully, and use the batteries in correct method. CVC Testing Technology Co., Ltd. (CVC) doesn't assume responsibility for any damage or loss because of misuse of batteries.

注 意 事 项

Important

1. 本报告无检测单位印章无效。
   The test report is invalid without the official stamp of CVC.
2. 未经本试验室书面同意，不得部分地复制本报告。
   Nobody is allowed to photocopy or partly photocopy this test report without written permission of CVC.
3. 本报告无批准人、审核人及检测人签名无效。
   The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.
4. 本报告涂改无效。
   The test report is invalid if altered.
5. 对检测报告若有异议，应于收到报告之日起十五天内向检测单位提出。
   Objections to the test report must be submitted to CVC within 15 days.
6. 本报告仅对送检样品负责。
   The test report is valid for the tested samples only.

报告中未加CMA 标志时，检测数据和结果仅供科研、教学或内部质量控制之用。
The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

地　址：广东省广州市科学城开泰大道天泰一路 3 号
广东省广州市黄埔区光谱东路 179 号百事高智慧园 D 栋
Address: No.3, Tiantai 1st Road, Kaitai Avenue, Science City, Guangzhou， Guangdong, China.
Building D, BASIGO INTELLIGENT, No.179, Guangpu East Road, Huangpu District, Guangzhou, P. R. China.
电　话(Tel)：020 32293888
传　真(FAX)：020 32293889
邮政编码(Post Code)：510663
E—mail： office@cvc.org.cn
http：//www.cvc.org.cn