MATERIAL SAFETY DATA SHEET

材料安全数据表

Lithium Cylindrical/Polymer Rechargeable Battery

圆柱锂离子可充电电池

Battery type: Lithium-ion Cylindrical/Polymer Battery

电池类型：圆柱锂离子电池

Model 型号: 14500CY-750mAh

Prepared by 编制	Approved by 批准
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Material Safety Data Sheet

材料安全数据表

Section 1-Chemical Product and Company Identification

第 1 节-化学品及企业标识

Product Identification 产品标识

Lithium-Ion Cylindrical battery 圆柱锂离子电池

Model 型号: 14500CY-750mAh

Nominal Voltage 标称电压: 3.6V

Equivalent Lithium content 相应锂含量: ≤20Wh

Manufacturer 生产供应商

Huizhou Highpower Technology Co.,LTD 惠州市豪鹏科技有限公司
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Section 2-Composition/ Information on Ingredients

第 2 节-成分/组成信息

Chemical Composition	Molecular Formula	Weight%	CAS No	OSHA	ACGIH
NiCoMn	LiNi0.5Co0.2Mn0.3O2	<40%	182442-95-1	N/A	N/A
Polyvinylidene fluoride	$(CH_2CF_2)_n$	<2%	24937-79-9	N/A	N/A
Graphite powder	C	<30%	7782-42-5	N/A	N/A
Electrolyte	LiPF6 $C_3H_4O_3$ $C_4H_6O_3$ $C_5H_{10}O_3$	<20%	21324-40-3	N/A	N/A
Polyethylene	$(C_2H_4)_n$	0.5-5%	9002-88-4	N/A	N/A
Copper foil	Cu	<10%	7440-50-8	N/A	N/A

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Nickel	Nickel	0.5-5%	7440-02-0	N/A	N/A
Aluminum foil	Al	0.5-5%	7429-90-5	N/A	N/A

Section 3-Hazards Identification

第 3 节-危害识别

Preparation hazards and classification 制备危害和分类	No risk if used in a normal way. Do not try to dismantle, open or damage a li-ion battery lest harmful ingredients contained within may be exposed to cause harm. 正常使用无风险。禁止拆解、打开或破坏锂离子电池。 接触电池内部所含成分或其他原料会造成危害。
Appearance, Color and Odor 外观，颜色和气味	Solid object with no odor, no color. 固体物质，无色，无味
Primary Route(s) of Exposure 主要泄露途径	Chemicals are contained in a sealed stainless steel enclosure. Risk of exposure to these chemicals occurs only when the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by way of Inhalation, Ingestion, Eye contact and Skin contact.化学品存放在密闭的不锈钢壳内，只有当电芯受到机械、加热或强电磁辐射，损害钢壳时，才会有泄漏的风险。在这种情况下，泄漏的电解液可能会导致吸入、摄入、眼睛接触以及皮肤接触的风险。
Potential Health Effects 潜在健康危害:	ACUTE (short term): See Section 8 for exposure controls In the event that the battery has been ruptured in which case the corrosive electrolyte solution contained within the battery may cause burns. Inhalation: Normally the tightly sealed battery is clear of risks of harmful Inhalation. Harmful Inhalation may happen only when there is battery rapture. In such case, vapors or mists from within the ruptured battery may cause respiratory irritation. Ingestion: Normally harmful substance is contained within the sealed battery and ingestion of harmful substances is impossible. But once the battery cracks and the contents within it are accidentally swallowed, serious chemical burns may occur on such body parts as mouth, esophagus and gastrointestinal tract. Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents from with an open battery can cause severe irritation or burns to the skin. Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents from within an open battery can cause severe irritation or burns to the eye. CHRONIC (long term): see Section 11 for additional toxicological data. 急性（短期）：如果电池破裂，电池内部具有腐蚀性的电解液会导致灼伤，关于泄漏管控的措施，请参阅第 8 节。 吸入：正常情况下无法从密闭电池中吸入有害物质。电池破裂产生的蒸汽或雾可能会

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	引起呼吸道刺激。 摄入：正常情况下无法从密闭电池中摄入有害物质。吞下破损电池内的物质会导致严重的口腔、食道和胃肠道化学烧伤。 皮肤接触：电池和皮肤间的接触不会造成危害。皮肤接触破损电池内的物质会造成严重的刺激或灼伤。 眼睛：电池和眼睛间的接触不会造成危害。眼睛接触破损电池内的物质会造成严重的刺激或灼伤。 慢性（长期）：有关其他有毒物质说明，请参阅第 11 节。
Medical Conditions Aggravated by Exposure 医疗状况加剧泄漏	Not applicable 不适用
Reported as carcinogen 致癌物质报道	Not applicable 不适用

Section 4-First-aid Measures

第4节-急救措施

Inhalation 吸入	If contents of an opened battery are inhaled, remove source of contamination or move the victim to fresh air. Obtain medical advice. 如果吸入打开电池内部的化学物质，要及时清理污染源或将人转移到空气新鲜处，并在医生的建议下治疗。
Skin contact 皮肤接触	If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard. 如果皮肤接触到打开电池内部的化学物质，请尽快清除受污染衣物、鞋子和皮革制品。立即用流动的温水轻轻冲洗至少 30 分钟。如果仍然感到刺激或疼痛，请立即就医。并在重新使用或丢弃之前，彻底清除受污染的衣物、鞋子和皮革制品。
Eye contact 眼睛接触	If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care

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	facility. 如果眼睛接触到打开电池内部的化学物质，请立即用流动的温水轻轻冲洗至少 30 分钟，并保持眼睛张开，使用中性盐水溶液更佳。必要时，在送往急救室治疗时继续保持冲洗。注意不要将受污染的水冲洗到未受伤的眼睛或脸部。需要立即将其送医治疗。
Ingestion 摄入	If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Help victim rinse his mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) water. If vomiting occurs naturally, help victim lean forward to reduce risk of aspiration. Help victim rinse mouth with water again. Quickly transport victim to an emergency care facility. 如果摄入打开电池内部的化学物质，受害人当即失去意识或产生抽搐，请勿用口过渡任何东西。用水彻底清洗受害人口腔。不要催吐，让受害人饮下 60~240mL（2~8 oz.）的水。若受害人自动呕吐，则将其前倾，降低误吸风险。并再次用水清洗受害人口腔，并立即送医。

Section 5-Fire Fighting Measures

第 5 节-消防措施

Flammable Properties 易燃性	The electrolyte contained within the battery is flammable liquid. Like all other sealed containers, the battery may explode when the temperature is too high; And battery explosion may release substance that is flammable or corrosive. 电池内的电解液属于易燃液体。与其他密闭容器一样，电池在过热条件下可能会发生爆炸；电池爆炸导致易燃性或腐蚀性物质释放。
Suitable extinguishing Media 合适的灭火器	Please use a suitable fire extinguisher to extinguish the burning materials. 请使用合适的灭火器来对燃烧的材料进行灭火。
Unsuitable extinguishing Media 不当的灭火器	Not available 不适用。
Explosion Data 爆炸数据	Sensitivity to Mechanical Impact: This may result in rupture in extreme cases Sensitivity to Static Discharge: Not Applicable 机械冲击的灵敏性：在极端情况下可能导致破裂 静放电的灵敏性：不适用
Specific Hazards arising from chemicals	If a Li-ion Battery catches fire, water can be used to put out the fire. When water is used, however, it is possible that hydrogen may be produced. So it is recommend that in a confined space where hydrogen gas may form an explosive mixture, smothering agents should be used to extinguish the fire.

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化学品的具体危害	锂离子电池起火可以用水扑灭。然而水与锂离子电池接触，可能会有氢气产生。在有限的空间内，氢气会形成爆炸性混合物。在这种情况下，建议用窒息性灭火器灭火。
Fire Equipment And fire protection 防护设施和消防注意事项	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear. 对于任何火灾，应撤离火灾区域，并在安全范围内灭火。穿戴加压器，自给式呼吸器和全套的防护装备。 从保护区或安全距离灭火。使用 NIOSH/MSHA 认可的全面自给式呼吸器和全套的防护装备。
NFPA 美国消防协会	Health: 0 Flammability: 0 Instability: 0 健康: 0　易燃性: 0　不稳定性: 0

Section 6-Accidental Release Measures

第6节-泄露应急处理

Personal Precautions, protective equipment, and emergency procedures 个人预防、防护设备和急救措施	Restrict access to contaminated area until it is clear of contamination. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8. 禁止进入污染区直到清理完成。禁止触摸泄漏物质。按第 8 节穿戴好个人防护装备。
Environmental Precautions 环境预防	Prevent materials from contaminating soil and from entering sewers or waterways. 防止材料污染土壤，下水道或水道。
Methods and materials for containment 遏制方法和材料	Stop the leakage if it is safe to do so. Contain the liquid with dry sand or earth. Clean up spills immediately. 在能确保安全的情况下，阻止继续泄漏。用干沙或泥土掩埋泄漏出的液体。立即清理泄露物质。
Methods and materials for cleaning up 清理方法和材料	Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of them according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal. 用惰性吸收剂（干沙或泥土）吸收泄漏出的物质。将用完的吸收剂放入可接受的废物容器中。

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	收集所有受污染的吸收剂，并按第 13 节中的说明进行处理。用洗涤剂和清水擦洗该区域；收集所有受污染的洗涤水，以便妥善处理。

Section 7-Handling and Storage

第7节-操作处置和储存

Handling 操作处置	Don't handle Li-ion Battery with metalwork. Do not open, dissemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace. Prevent formation of dust. Pay attention to such warnings against explosions and fires: Keep ignition sources away- Do not smoke. 禁止使用金属制品处理锂离子电池。禁止打开、拆卸、碾压或烧毁电池。 确保工作场所良好的通风。 防止灰尘堆积。注意防止爆炸和火灾的提示：远离火源-禁止吸烟。
Storage 储存	If the Li-ion Battery are subject to storage for such a long term as more than 3 months, it is recommended to recharge the Li-ion Battery periodically. 3 months: -10℃~+40℃, 45 to 85%RH And recommended at 0℃~+35℃ for long period storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. The voltage for a long time storage shall be 3.6V~4.2V range. 如果锂离子电池长期储存超过 3 个月，建议定期给锂离子电池进行充电。 3 个月：温度-10℃~+40℃, 湿度 45~ 85%RH。建议在 0℃~+35℃长期储存。电池储存后，在交付状态下（50%满充容量）的容量恢复率假设在 80%或以上。长期储存的电压应在 3.6V~4.2V。
	Do not storage Li-ion Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects. Keep out of reach of children. Do not expose Li-ion Battery to heat or fire. Avoid storage in direct sunlight. Do not store together with oxidizing and acidic materials. 禁止将锂离子电池杂乱放置在盒子或抽屉中，否则

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	它们可能会相互碰撞发生短路或者与其他金属物体接触发生短路。 请将本品放在儿童不能接触的地方。 禁止将锂离子电池暴露在高温或火中。 避免阳光直射。 禁止与氧化物质和酸性物质一同储存。

Section 8-Exposure Controls/Personal Protection

第8节-接触控制/个人防护

Engineering Controls 工程控制	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place. 使用局部排气通风或其他工程控制来管控灰尘、烟雾和蒸汽的来源。远离热源和明火，存放在阴凉干燥处。
Personal Protective Equipment 个人防护设备	Respiratory Protection: Not necessary under normal conditions. Skin and body Protection: Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery. Hand protection: Wear neoprene or natural rubber material gloves if handling an open or leaking battery. Eye Protection: Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery. 呼吸系统防护：没有必要 正常情况： 皮肤和身体防护：在正常条件下不需要，如果处理打开或泄露的电池，请戴上氯丁橡胶或丁腈橡胶手套。 手部防护：如果处理打开或泄露的电池，请戴上氯丁橡胶或丁腈橡胶手套。 眼部防护：在正常条件下不需要，如果处理打开或泄露的电池，请戴上安全镜。
Other Protective Equipment 其他防护设备	Have a safety shower and eye wash fountain readily available in the immediate work area. 您可以在附近的工作区域随时使用安全淋浴和洗

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	眼器。
Hygiene Measures 卫生措施	Do not eat, drink, or smoke in work area. Maintain good housekeeping. 禁止在工作区域进食、饮水或吸烟。 保持良好的卫生管理。

Section 9-Physical and Chemical Properties

第9节-物理和化学特性

Physical State 物理状态	Form: Solid 外形：坚固
	Color: Green 颜色：绿色
	Odour: Monotony 气味：无味
Change in condition 条件变化:	
pH, with indication of the concentration PH 值：表示浓度	Not available. 不适用
Melting point/freezing point 熔点/凝固点	Not available.不适用
Boiling Point, initial boiling point and Boiling Range 沸点，初沸点和沸腾范围:	Not available. 不适用
Flash Point 闪点	Not available. 不适用
Upper/lower flammability or explosive limits 可燃性或爆炸上/下限	Not available. 不适用
Vapor Pressure 蒸汽压力:	Not applicable 不适用
Vapor Density: (Air = 1) 蒸汽密度：（空气=1）	Not applicable 不适用
Density/relative density 密度/相对密度	Not available. 不适用
Solubility in Water: 水中的溶解度	Insoluble 不溶
n-octanol /water partition coefficient 正辛醇/水分配系数	Not available. 不适用
Auto-ignition temperature 自燃温度	Explosion may happen if the cell is heated to a temperature above 130℃. So, make sure to heat it in a fire safety cabinet if the temperature has to go above 130℃. It is not that the cell itself is flammable, it is just that if the cell burns down, the organic substances within it will be on fire. 加热超过 130℃以上，电芯可能会发生爆炸，所以

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	如果加热超过 130℃，还请在消防安全柜中进行。电芯本身不易燃，但如果电芯被烧毁，内部的有机物质会燃烧。
Decomposition temperature 分解温度	Not available. 不适用
Odour threshold 气味阈值	Not available. 不适用
Evaporation rate 蒸发率	Not available. 不适用
Flammability (soil, gas)易燃性（土壤，气体）	Not available. 不适用
Viscosity 粘性	Not applicable 不适用

Section 10- Stability and Reactivity

第 10 节-稳定性和反应性

Stability 稳定性	The product is stable under normal conditions. 产品在正常条件下稳定。
Don'ts (e.g. static discharge or shock vibration)避免情况（如：静电放电，冲击振动）	Do not apply excessive impact to the battery. Vibration during transportation won't lead to leakage, fire or explosion. Do not try to disassemble or crush the battery, or develop a short circuit to it, or even put the two electric poles the other way round. Avoid mechanical or electrical abuse of the cell. 禁止对电池过度碰撞、冲击。 运输过程中受到的振动不会导致漏液、起火或爆炸。 禁止拆解、挤压，将正负极短路或反装。 请避免电池进行机械以及电子方面的滥用
Incompatible Materials 不相容材料	Not Available 不适用
Hazardous Decomposition Products 危险的分解产物	This material may release toxic fumes if burned or exposed to fire 该材料可能在燃烧或起火时释放有害气体。
Possibility of Hazardous Reaction 有害反应的可能性	Not Available 不适用

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Section 11-Toxicological Information

第 11 节-毒理学资料

Irritation 刺激性	Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur. 只有当电芯受到机械、加热或电滥用损害外壳时，才会对人体有刺激风险。如果发生这种情况，可能会对皮肤、眼睛和呼吸道产生刺激。
Sensitization 致敏性	Not Available 不适用
Neurological Effects 神经系统的影响	Not Available 不适用
Teratogenicity 致畸性	Not Available 不适用
Reproductive Toxicity 生殖毒性	Not Available 不适用
Mutagenicity (Genetic Effects) 诱变性(遗传效应)	Not Available 不适用
Toxicologically Synergistic Materials 毒理学协同材料	Not Available 不适用

Section 12-Ecological Information

第 12 节-生态学资料

General note: 一般注意事项：	Water polluting class 1(Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water source or sewage system. 水危害级别 1（自我评估）：对水有轻微污染 禁止将未稀释或大量的产品倒入地下水、水源或污水处理系统中。
Anticipated behavior of a chemical product in environment/possible environmental impact / eco-toxicity	Not Available 不适用
Mobility in soil 土壤中的移动性	Not Available 不适用

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Persistence and Degradability 持久性和降解性	Not Available 不适用
Bioaccumulation potential 富集可能性	Not Available 不适用
Other Adverse Effects 其他不良影响	Not Available 不适用

Section 13-Disposal Considerations

第 13 节-废弃处置注意事项

Product disposal recommendation: Observe local, state and federal laws and regulations. Packaging disposal recommendation: Be aware that discarded batteries may cause fire, so make sure to tape the battery terminals to insulate them before disposal. Don't disassembly the battery. Make sure to completely discharge containers (no tear drops, no remaining powder and no scrape). Containers can be recycled or re-used.

产品废弃处理建议：遵守当地，州和联邦的法律法规。包装废弃处理建议：请注意丢弃的电池可能会引起火灾，请将电池两端用胶带隔离。禁止拆卸电池。将电池容器完全放电（无残液，无剩余粉末，避免刮擦）。容器可以回收或重复使用。

The substances used in batteries and accumulator batteries can pose potential risks to the environment and human health; Waste batteries and accumulators must not be left unsorted and disposed of together with other municipal waste. Instead, such kind of wastes should be separately captured for further treatment and recycling.

电池和蓄电池中的使用的物质会对环境和人体健康产生潜在影响；不将电池和蓄电池作为未分类的城市垃圾处理，将其单独收集以便进行处理和回收。

Section 14-Transport Information

第 14 节-运输信息

This report applies to freight by sea, by air and by land;本报告适用于海运、空运、陆运；

The Li-ion Battery tested according to the requirements of the 7th revised edition of the UN manual of tests and Criteria, Part III, subsection 38.3；

锂离子电池按照联合国测试和标准手册第7次修订版（第III部分，第38.3小节）的要求进行测试；

Lithium ion battery was protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;

保护锂离子电池，防止短路。包括防止在同一包装内与导电材料相接触，从而造成短路；

The LITHIUM ION BATTERY was transported according to Section IA/IB/ II of PACKING INSTRUCTION 965~967 of the 2023 IATA Dangerous Goods regulations 64th Edition and is in line with U.S.DOT regulations regarding the safe transport of Li-ion Battery.

锂离子电池运输根据 IATA 危险品法规第 64 版包装规范第 965-967 章第 IA/IB/ II 节，并适用于美国国防部关于锂离子电池安全运输的规定。

More information concerning shipping, testing, marking and packaging can be obtained from label master at

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http://www.labelmaster.com/.

关于运输，测试，标签和包装的更多信息，请访问http://www.labelmaster.com/

The packaging shall be protected from mechanical damage during transportation, conveying or stacking. The packaging materials chosen shall be designed as resistant to electro-conductibility, corrosion and moisture.

包装应尽量避免在运输、搬运和堆放的过程受到机械损伤。包装应选择能够防止意外导电、腐蚀和浸湿的设计和材料。

The package must be handled with care in case that the risk of flammability reveals itself when the package is damaged; each package must be labeled with a Li-ion Battery handling label or labels apart from those of the 9 categories of hazards. With regard to transport, the following regulations are cited and considered:

包装必须小心处理，如果包装破损，则存在易燃危险；每个包装必须贴上锂离子电池处理标签，或除9类危险品标签外的标签。关于锂离子电池的运输，可以引用和论证以下规定:

- The International Civil Aviation Organization (ICAO) Technical Instructions.
- 国际民用航空组织(ICAO)技术说明。
- The International Air transport Association (IATA) Dangerous Goods Regulations. UN number of lithium battery: UN3480 or UN3481;
- 国际航空运输协会（IATA）危险货物规定。锂电池UN号：UN3480 或 UN3481;

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN特定的运输名称/描述（技术名称）：锂离子电池或安装在设备中或与设备包装在一起的锂离子电池

UN Classification (Transport hazard class): Non dangerous;

UN分类（运输危险类）：非危险；

Marine pollutant (Y/N): N;

海洋污染物(是/否): 否;

- The International Maritime Dangerous Goods (IMDG) Code.
- 国际海运危险货物(IMDG)准则

To transport lithium-ion batteries by sea, make sure that packaging is strong enough so as to avoid risks of short-circuit. UN number of lithium battery: UN3480 or UN3481;

锂离子电池海上运输，需要包装牢固，防止电池短路。锂电池UN号：UN3480 或 UN3481；

UN Proper shipping name/Description (technical name): Lithium ion batteries or Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment;

UN特定的运输名称/描述（技术名称）：锂离子电池或安装在设备中或与设备包装在一起的锂离子电池；

UN Classification (Transport hazard class): Non dangerous; Marine pollutant (Y/N): N;

UN分类（运输危险类）：非危险；海洋污染物(是/否): 否;

Special Provision: International maritime dangerous goods code (IMDG) 188, 230, 310, 348, 957;

特别规定：国际海运危险货物(IMDG)准则188, 230, 310, 348, 957;

- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA
- 美国危险品法规(HMR)根据RSPA发布的最终法规
- The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research and Special Programs Administration (RSPA)
- 美国交通部危险品安办公室(DOT)研究所和特殊项目管理局(RSPA)

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Section 15-Regulatory Information

第 15 节-法规信息

OSHA hazard communication standard (29 CFR 1910.1200)
OSHA 危害通信标准(29 CFR 1910.1200)

_____Hazardous危险 _____V_____Non-hazardous无危险

Section 16-Other Information

第 16 节-其他信息

The information above is believed to be accurate and based on the best information currently available to us. However, it should not be construed as any warranty of merchantability or any other warranty, express or implied, and we assume no liability whatsoever for any consequences arising from the use. Fitness for any particular purpose shall not be determined according to this sheet alone, though we have tried our best to prove the authenticity of the data contained herein. It is offered solely for your information. This material safety data sheet is intended to provide guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

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