# 化学品安全技术说明书
# Material Safety Data Sheet (MSDS)

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| 委托单位<br>Consignor | 东莞市华源兴科技有限公司<br>Dongguan Huayuanxing Technology Co.,Ltd.<br>中国广东省东莞市大岭山镇大塘地塘岭路 21 号 301 室<br>Room 301, No. 21, Ditangling Road, Datang, Dalingshan Town, Dongguan City, Guangdong Province |
| 产品名称<br>Name of Product | 锂离子电池<br>Li-ion Battery |
| 型号 / 规格<br>Model / Type Reference | HYX 18650 |
| 标称电压<br>Nominal Voltage | 3.7V |
| 额定容量 / 能量<br>Rated Capacity / Energy | 1500mAh(5.55Wh) |
| 版本号<br>Version Number | V1.0 |
| 收样日期：<br>Sample Received Date： | 2025.11.11 |
| 完成日期：<br>Completed Date： | 2025.12.24 |

Prepared by: Mickey Zhu Checked by: Curly Hu Approved by: Starry Li

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## 第一部分 化学品及企业标识
## Section 1- Chemical Product and Company Identification

| | | | |
|---|---|---|---|
| 产品名称<br>Name of Product | 锂离子电池<br>Li-ion Battery | | |
| 型号/规格<br>Model / Type Reference | HYX 18650 | | |
| 生产单位<br>Manufacturer | 东莞市华源兴科技有限公司<br>Dongguan Huayuanxing Technology Co.,Ltd.<br>中国广东省东莞市大岭山镇大塘地塘岭路 21 号 301 室<br>Room 301, No. 21, Ditangling Road, Datang, Dalingshan Town, Dongguan City, Guangdong Province | | |
| 应急电话<br>Emergency Telephone | 13147072685 | 邮箱<br>E-mail | / |
| 参考文件<br>Referenced Documents | 依据 GB/T 17519-2013、GB/T 16483-2008 和 ISO 11014: 2009 编写<br>According to GB/T 17519-2013 & GB/T 16483-2008 & ISO 11014: 2009 | | |
| 该 MSDS 报告由精准通检测认证（广东）有限公司编写。项目号: PTC25121112408B-LD03.<br>This MSDS was prepared by Precise Testing & Certification (Guangdong) Co., Ltd. Item Number: PTC25121112408B-LD03. | | | |

## 第二部分 危险性概述
## Section 2 – Hazards Identification

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| 危险性类别<br>Preparation hazards and classification | 在正常使用中没有危险，不能拆除，打开，切碎电池暴露出内部有害成分或燃烧电池。<br>Not dangerous with normal use. Do not dismantle, open or shred the battery ingredients contained within or their ingredients products could be harmful. |
| 外观颜色和气味<br>Apperance, Color, and Odor | 无气无味的固体<br>Solid object with no odor, no color. |
| 侵入途径<br>Primary Route(s) of Exposure | 这些化学物品包含在密封的外壳内。如果内部电芯机械性，热的或电力性的滥用会产生接触性伤害。如果这时出现，暴露的电解液可能导致吸入摄取，眼睛接触和皮肤接触的伤害<br>These chemicals are contained in a sealed enclosure. Risk of exposure occurs only if the internal cell is mechanically, thermally or electrically abused to the |

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| | point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact |
| 健康危害<br>Potential Health Effects: | 急性中毒: 看第八部分暴露控制。一旦电池破裂，内部电芯内的电解质溶液将具有腐蚀性，并可能导致烧伤。<br>**ACUTE (short term): see** Section 8 for exposure controls. In the event that this internal cell has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.<br>吸入: 密封的电池内不认为有浸入危害。<br>**Inhalation:** Inhalation of materials from a sealed battery is not an expected route of exposure.<br>食入: 密封的电池不会被吞咽暴露材料。<br>**Ingestion:** A sealed battery not be swallowed to expose the material.<br>皮肤: 皮肤接触密封的电池将不会导致任何伤害。皮肤接触未密封的内部电芯将导致严重的过敏或刺激。<br>**Skin:** Contact between the battery and skin will not cause any harm. Skin contact with contents of an open internal cell can cause severe irritation or burns to the skin.<br>眼睛: 眼睛接触密封的电池将不会导致任何伤害。眼睛接触未密封的内部电芯将导致严重的过敏或刺激。<br>**Eye:** Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open internal cell can cause severe irritation or burns to the eye.<br>慢性中毒: 看第十一部分附加的毒理学资料。<br>**CHRONIC (long term):** see Section 11 for additional toxicological data |
| 致癌物质<br>Reported as carcinogen | 不适用<br>Not applicable |

## 第三部分 成份/组成信息
## Section 3 – Composition/Information on Ingredients

电池的分类 □ 物质☒混合物

Classification of the battery□ substance☒mixture

| 化学名称 | CAS 号 | 百分含量 |
|---|---|---|

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| Chemical Name | CAS Number | Weight-% |
|---|---|---|
| 钴酸锂<br>Lithium cobaltate | 12190-79-3 | 15-40 |
| 丙酸乙酯<br>Ethyl propionate | 105-37-3 | 15-40 |
| 铜箔<br>Copper | 7440-50-8 | 10-30 |
| 铝箔<br>aluminium | 7429-90-5 | 10-30 |
| 石墨<br>Graphite | 7782-42-5 | 7-25 |
| 碳酸乙烯酯<br>Ethylene carbonate | 96-49-1 | 0-15 |
| 碳酸丙烯酯<br>Propylene carbonate | 108-32-7 | 0-15 |
| 六氟磷酸锂<br>Lithium hexafluorophosphate | 21324-40-3 | 0-15 |
| 隔离膜<br>polyethylene | 9002-88-4 | 0-5 |

注：CAS 号是化学文摘社的注册号。

Note: CAS number is Chemical Abstract Service Registry Number.

N/A: 不适用Not applicable.

## 第四部分 急救措施
## Section 4 – First-aid Measures

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| **吸入**<br>**Inhalation** | 如果吸入未密封的内部电芯，立即转移到有新鲜空气的地方，同时对受污染区域通风。就医处理。<br>If contents of an opened internal cell are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice. |
| **皮肤接触**<br>**Skin contact** | 如果皮肤可能接触未密封的内部电芯，尽可能迅速的移开被污染的衣服，鞋和皮革物。用大量的清水冲洗至少 30 分钟。速就医。再使用和丢弃衣服，鞋和皮革物之前要充分的净化。<br>If skin contact with contents of an open internal cell 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. |
| **眼睛接触**<br>**Eye contact** | 如果眼睛可能接触未密封的内部电芯，立即用清水冲洗至少 30 分钟保持眼睛睁开，中性盐溶液尽快适用，速就医。 |

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| | If eye contact with contents of an open internal cell 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. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility. |
| **食入**<br>**Ingestion** | 如果食入未密封的内部电芯，不要催吐，立即用清水漱口，速就医。<br>If ingestion of contents of an open internal cell occurs, DO NOT INDUCE VOMITING. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility. |

## 第五部分 消防措施
## Section 5 – Fire-fighting Measures

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| 易燃的特性<br>Flammable Properties | 如果这个电池已经破裂，内部电芯中的电解质溶液将是易燃的。像任何密封容器一样，电池在暴露于过热时可能会破裂;这可能会导致易燃或腐蚀性物质的释放。<br>In the event that this battery has been ruptured, the electrolyte solution contain within the Internal cell would be flammable. Like any sealed container, battery may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials. |

燃爆危害：过度加热会导致内含物溢出。

Flammability hazard: Excessive heat can cause inclusions to escape.

燃烧产物和内部物质与空气和水接触的生成物包括：CO, $CO_2$, HF，氟氧化磷，金属氧化物，其他刺激性和毒性气体等。

Combustion products and internal substances in contact with air and water products include: CO, $CO_2$, HF, phosphorus fluoride oxide, metal oxides, other irritant and toxic gases.

使用合适燃烧材料的灭火器，如：干粉，二氧化碳，砂子，土等灭火。

Use extinguishing media suitable for the materials that are burning, Such as dry powder, $CO_2$, soil sand and so on.

如果发生火灾，疏散该地区，并在安全距离下灭火。在安全距离灭火时，需要佩戴压力自主呼吸器。

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.

## 第六部分 泄漏应急处理
## Section 6 – Accidental Release Measures

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| 个人预防措施、防护设备和应急程序<br>Personal Precautions, protective equipment, and emergency procedures | 在清理工作完成之前，禁止进入该区域。不要碰溢出的材料。按照第 8 节的规定，穿戴足够的个人防护装备。<br>Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8. |
| 环保措施<br>Environmental Precautions | 防止材料污染土壤和进入下水道或水道。<br>Prevent material from contaminating soil and from entering sewers or waterways. |
| 密封材料的方法<br>Methods and materials for Containment | 如果安全的话，就堵住泄漏。用干沙子或泥土把溢出的液体堵住。立即清理溢出物。<br>Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately. |
| 清理材料的方法<br>Methods and materials for cleaning up | 用惰性吸附剂(干沙子或泥土)吸收溢出的材料。将受污染的吸收剂倒入可接受的废物容器中。收集所有受污染的吸收剂，并按照第 13 章的废弃弃置。用清洁剂和水擦洗该区域;收集所有受污染的洗净水，妥善处理。<br>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 according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal. |

## 第七部分 操作处置与储存
## Section 7 – Handling and Storage

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| 操作<br>Handling | 不要将电池和金属制品一同处理。不要打开，拆解，挤压或燃烧电池。确保工作场所通风良好。防止粉尘的形成。<br>Don’t handle battery with metalwork. Do not |

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| | open, dissemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace. Prevent formation of dust.<br>爆炸和着火防护信息: 远离火源——严禁吸烟。<br>Information about protection against explosions and fires: Keep ignition sources away- Do not smoke. |
| 储存<br>Storage | 如果电池将进行超过 3 个月的长时间存储，建议定期对电池进行充电。<br>If the battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the battery periodically.<br>建议长时间存储将存储温度控制在 0℃~35℃，45 to 85%RH.<br>And recommended at 0°C~35°C, 45 to 85%RH for long period storage.<br>不要将电池随意的放置在箱子或抽屉，这样也许会使电池互相短路或被其他金属物品短路。<br>Do not store battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.<br>放置于小孩不能接触的地方。<br>Keep out of reach of children.<br>不要将电池暴露在热源或火焰中。避免放置在阳光直射的地方。<br>Do not expose battery to heat or fire. Avoid storage in direct sunlight.<br>不要将电池与氧化物和酸性物质存储在一起。<br>Do not store battery together with oxidizing and acidic materials. |

## 第八部分 接触控制和个人防护
## Section 8 – Exposure Controls and Personal Protection

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| 工程控制<br>Engineering Controls | 使用当地的排气通风或其他工程控制来控制灰尘、雾、烟雾和蒸汽的来源。<br>Use local exhaust ventilation or other engineering controls to control sources of dust, |

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| | mist, fumes and vapor.<br>远离热源和明火。存放于阴凉干燥处。<br>Keep away from heat and open flame. Store in a cool, dry place. |
| 个人防护<br>Personal Protective Equipment | 呼吸保护:正常情况下不需要。<br>**Respiratory Protection:** Not necessary under normal conditions.<br>皮肤和身体保护:在正常情况下不需要，如果处理打开或泄漏的电池，戴氯丁橡胶或丁腈橡胶手套。<br>**Skin and body Protection:**Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery.<br>手保护:如果操作打开或泄漏的电池，应佩戴氯丁橡胶或天然橡胶手套。<br>**Hand protection:** Wear neoprene or natural rubber material gloves if handling an open or leaking battery.<br>眼睛保护:在正常情况下不需要，如果处理打开或泄漏的电池，请佩戴安全眼镜。<br>**Eye Protection:** Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery. |
| 其他防护设备<br>Other Protective Equipment | 在工作区域内准备一个安全的淋浴器和洗眼器。<br>Have a safety shower and eye wash fountain readily available in the immediate work area. |
| 卫生措施<br>Hygiene Measures | 不要在工作区域吃、喝、抽烟。<br>Do not eat, drink, or smoke in work area.<br>保持工地整洁。<br>Maintain good housekeeping. |

## 第九部分 理化特性
## Section 9 - Physical and Chemical Properties

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| 物理状态<br>Physical State | 形态：固体<br>Form: Solid |

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| | 形状：近圆柱体<br>Shape: almost cylinder |
| | 颜色：蓝色<br>Color: Blue |
| | 气味：无气味<br>Odor: Odorless |
| pH值，表示浓度<br>pH, with indication of the concentration | 不适用<br>Not applicable |
| 熔点与凝固点<br>Melting point/freezing point | 没有相关资料<br>No relevant information available |
| 沸点<br>Boiling Point | 没有相关资料<br>No relevant information available |
| 闪点<br>Flash Point | 没有相关资料<br>No relevant information available |
| 上/下可燃性或爆炸性极限<br>Upper/lower flammability or explosive limits | 没有相关资料<br>No relevant information available |
| 蒸气压<br>Vapor Pressure | 不适用<br>Not applicable |
| 蒸汽密度（1个大气压）<br>Vapor Density (Air = 1) | 不适用<br>Not applicable |
| 密度/相对密度<br>Density/relative density | 没有相关资料<br>No relevant information available |
| 水溶性<br>Solubility in Water | 不相溶<br>Insoluble |
| 自燃温度<br>Auto-ignition temperature | 130°C |
| 分解温度<br>Decomposition temperature | 没有相关资料<br>No relevant information available |
| 蒸发率<br>Evaporation rate | 没有相关资料<br>No relevant information available |
| 可燃性（土壤，大气）<br>Flammability (soil, gas) | 没有相关资料<br>No relevant information available |
| 粘度<br>Viscosity | 不适用<br>Not applicable |

## 第十部分 稳定性和反应活性
## Section 10 - Stability and Reactivity

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| 稳定性<br>Stability | 电池在正常工作条件下是稳定的。<br>The battery is stable under normal conditions. |
| 避免条件 (静态放电，冲击，振动等)<br>Conditions to Avoid (e.g. static discharge, shock or vibration) | 电池不能有机械冲击。<br>Do not subject battery to mechanical shock.<br>在运输期间的振动不能导致漏液，火灾或爆炸。<br>Vibration encountered during transportation does not cause leakage, fire or explosion.<br>不能拆开，碾碎，短路或错误的极性安装。<br>Do not disassemble, crush, short or install with incorrect polarity.<br>避免机械或电力滥用。<br>Avoid mechanical or electrical abuse. |
| 不相容材料<br>Incompatible Materials | 没有相关资料<br>No relevant information available |
| 危险分解产品<br>Hazardous Decomposition Products | 这种材料如果燃烧或暴露在火中，可能会释放出有毒的烟雾<br>This material may release toxic fumes if burned or exposed to fire |
| 危险反应的可能性<br>Possibility of Hazardous Reaction | 没有相关资料<br>No relevant information available |

## 第十一部分 毒理学信息
## Section 11 - Toxicological Information

| | |
|---|---|
| 刺激性<br>Irritation | 只有当内部电芯被机械、热或电滥用到损害外壳的程度时，才会发生刺激的风险。如果发生这种情况，皮肤、眼睛和呼吸道可能会受到刺激。<br>Risk of irritation occurs only if the internal 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. |
| 感光性<br>Sensitization | 没有相关资料<br>No relevant information available |
| 神经系统影响 | 没有相关资料 |

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| | |
|---|---|
| Neurological Effects | No relevant information available |
| 生殖毒性<br>Reproductive Toxicity | 没有相关资料<br>No relevant information available |
| 诱变（遗传反应）<br>Mutagenicity (Genetic Effects) | 没有相关资料<br>No relevant information available |

## 第十二部分 生态学信息
## Section 12 - Ecological Information

| | |
|---|---|
| 一般性注释<br>General note: | 1 级水危害(自评):对水有轻微危害。<br>Water hazard class 1(Self-assessment): slightly hazardous for water.<br>不要让未经稀释的产品或大量的产品到达地下水，水道或污水系统。<br>Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.<br>处置废弃电池时，远离火源，雨水和雪水。<br>Dispose of batteries away from fire, rain and snow. |
| 化学品在环境中的预期行为/可能的环境影响/生态毒性<br>Anticipated behavior of a chemical product in environment/possible environmental impace/ecotoxicity | 没有相关资料<br>No relevant information available |
| 土壤中移动性<br>Mobility in soil | 没有相关资料<br>No relevant information available |
| 持久性和降解性<br>Persistence and Degradability | 没有相关资料<br>No relevant information available |
| 生物体内积累的潜伏<br>Bioaccumulation potential | 没有相关资料<br>No relevant information available |
| 其他有害效应<br>Other Adverse Effects | 没有相关资料<br>No relevant information available |

## 第十三部分 废弃处置
## Section 13 – Disposal Considerations

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废弃电池不能直接当作普通垃圾处理。

Disposal battery cannot be directly treated as ordinary garbage.

产品处理建议:遵守当地、州和联邦法律法规。包装处理建议:注意废弃电池可能引起火灾，用胶带将电池端子绝缘。不要拆卸电池。完全排出容器(无泪滴，无粉末残留，仔细刮擦)。容器可以回收或再使用。遵守当地、州和联邦的法律法规。

Product disposal recommendation: Observe local, state and federal laws and regulations.

Packaging disposal recommendation: Be aware discarded battery may cause fire, tape the battery terminals to insulate them. Don't disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

## 第十四部分 运输信息
## Section 14 – Transport Information

| 包装说明<br>Packing Instruction | PI965<br>Section IB | PI966<br>Section II | PI967<br>Section II |
|---|---|---|---|
| 联合国运输专用名称<br>UN Proper Shipping Name / Description | 锂离子电池<br>Lithium ion batteries | 锂离子电池与设备包装在一起<br>Lithium ion batteries packed with equipment | 锂离子电池安装在设备中<br>Lithium ion batteries contained in equipment |
| 空运运输标签<br>Label for Air transportation | 电池标签，仅限货机标签，第九类危险品标签<br>Battery mark, Cargo aircraft Only Label, The Class 9—Lithium Battery hazard label | 电池标签<br>Battery mark | 电池标签<br>Battery mark |
| 海运，陆运，铁路运输标签<br>Label for Sea, Road, Railway transportation | 电池标签<br>Battery mark | 电池标签<br>Battery mark | 电池标签<br>Battery mark |
| 危险性类别<br>Hazard Class | 9 | - | - |
| UN 编号<br>UN Number | UN3480 | UN3481 | UN3481 |
| 包装等级<br>Packing Group | - | - | - |
| 注意事项<br>Remarks | 包装牢固并防止产品短路<br>Provided that packaging is strong and prevent the products from short-circuit. | | 必须防止设备意外启动<br>the equipment must be equipped with an effective means of preventing accidental |

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| | | |
|---|---|---|
| | | activation. |

用户需要遵守的特殊防范措施：无

(Special precautions for user): No

海洋污染物：无

(Marine pollutant): No

EmS 编号：F-A, S-I

(EmS No.): F-A, S-I

本锂离子电池(HYX 18650)已通过 UN38.3 测试，并符合联合国关于危险货物运输的建议;国际航空运输协会危险品规定，以及美国交通部安全运输电动汽车的相关规定。

The Li-ion Battery (HYX 18650) had passed the UN 38.3 test and also complies with the United Nations Recommendations on the Transport of Dangerous Goods; IATA Dangerous Goods regulations, and applicable U.S. DOT regulations for the safe transport of electric vehicle.

锂离子电池根据《联合国危险品货物运输规章范本》特别条款 188，可作为“非危险货物”处理。

Li-ion Battery can be treated as “Non-dangerous goods” under the United Nations Recommendations on the Transport of Dangerous Goods, SP188.

锂离子电池芯和电池必须在荷电状态（SoC）不超过其额定容量的 30%状态下进行运输。锂离子电池芯和电池进行 PI967 运输时，设备指示电池容量不超过 25%。

Lithium-ion cells and batteries must be transported in a state of charge (SoC) not exceeding 30% of their rated capacity.When transporting lithium-ion battery cells and batteries for PI967, the device indicates that the battery capacity should not exceed 25%.

锂/钠电池的国际运输有以下组织制订了规则：

International transport of lithium or sodium batteries is regulated by the following organizations:

- 国际民航组织 ICAO《危险物品航空安全运输技术导则》
- The International Civil Aviation Organization (ICAO) Technical Instructions.
- 国际航空运输协会 IATA《危险品规则》第 67 版
- The International Air transport Association (IATA) Dangerous Goods Regulations. 67th edition.
- 国际海事组织 IMO《国际海运危险货物规则》 IMDG(42-24)
- The International Maritime Dangerous Goods (IMDG) Code. IMDG(42-24)
- 《国际危险货物铁路运输欧洲协定》RID 2026
- European Agreement concerning the International Carriage of Dangerous Goods by Rail RID 2026
- 欧洲经济委员会内陆运输委员会《国际公路运输危险货物协定》ADR 2026
- Economic Commission for EuropeInland Transport Committee Agreement Concerning the International Carriage of Dangerous Goods by Road ADR 2026

## 第十五部分 法规信息
## Section 15 - Regulatory Information

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《危险品规则》
《Dangerous Goods Regulations》
《国际海运危险货物规则》
《International Maritime Dangerous Goods》
《联合国危险品货物运输规章范本》
《United Nations Recommendations on the Transport of Dangerous Goods Regulations》
《危险品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)
《毒性物质控制法》
《Toxic Subatance Control Act》(TSCA)
《附加基金修正复审法 III （302/311/312/313）》
《Superfund Amendments and Reauthorization Act Title III （302/311/312/313）》
参照联合国，国家，地方性法规。
In according with United Nations, country, and local laws.

## 第十六部分 其他信息
## Section 16 - Other Information

以上信息被认为是准确的，代表了我们目前可以得到的信息。但是，我方不就该等信息作出能力保证或任何其他明示或暗示的保证，我们不承担因使用该等信息而产生的责任。使用者应自行进行调查，以确定有关资料是否适合其特定用途。虽然在准备本文所包含的数据时采取了合理的预防措施，但仅供您参考、考虑和调查。

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