Risk Warning and Fire Safety Notice for Lithium Batteries

（EVE-EHS-TZ-20240906-001，First Edition）

Dear Partners,

In accordance with the "Recommendations on the Transport of Dangerous Goods" by the United Nations, lithium batteries that exceed certain thresholds for lithium content, watt-hours, or packaging quantity are categorized as Class 9 dangerous goods for transportation purposes. Based on a deep understanding of lithium batteries, our company adopted a variety of Safety Designs. Our products have passed relevant safety tests and comply with applicable product safety and transportation safety standards. Lithium batteries are high-energy-density products that contain hazardous chemicals. Consequently, they pose risks of thermal runaway, such as heating, smoking, fires, or explosions. These risks can be triggered by complex factors such as environmental changes, external impacts, improper storage, or incorrect usage. If there are any lapses in fire safety management, these risks could escalate into accidents.

To mitigate risks and incidents while safeguarding the mutual interests of both sides to the greatest extent, we provide the following risk notifications and key recommendations regarding fire safety throughout the entire lifecycle of lithium batteries, from production to disposal, to all our partners. We sincerely hope that your company give these matters the utmost attention. Additionally, we are prepared to offer your company professional fire safety support for the application environments and storage facilities of lithium batteries, thereby contributing to a safer and more reliable operational system. These recommendations are not exhaustive but serve as guidelines for our partners. They are intended to provide a framework for best practices and should be adopted as necessary to meet specific needs and circumstances. Additionally, these guidelines may be updated as required to reflect changes in laws and regulations, industry standards, or operational practices, ensuring that they remain relevant and effective.

Part1: General Safety Recommendations

1. Establish and implement a hierarchical fire safety responsibility system and a post-specific fire safety responsibility system. Appoint department heads as the fire safety officers of their respective departments, responsible for organizing and implementing fire safety management within their departments.

2. Establish a work safety management organization, equipped with dedicated work safety management personnel, responsible for the daily management and supervision of work safety. Hold regular safety meetings and training sessions to ensure that employees and workers are informed of updated instructions, emergency evacuation plans, and relevant information.

3. Ensure investment in work safety and ensure that the necessary funds, materials, technology, personnel, and other resources for work safety are in place.

4. Production facilities and warehouses must pass the fire safety design review and acceptance by regulatory authorities in accordance with relevant laws and regulations on fire safety. According to relevant standards, fire automatic alarm systems, automatic sprinkler systems (sprinkler systems are prohibited in areas involving metallic lithium), fire hydrant systems, smoke control systems, fire extinguishers and other fire-fighting equipment and facilities shall be equipped, and regular maintenance and repair shall be carried out in accordance with regulatory requirements. The building's fire-fighting facilities shall be comprehensively inspected at least once a year to ensure their integrity and effectiveness. Set up a fire control room and implement a 24-hour duty system, ensuring that there are at least 2 certified personnel on duty per shift.

5. Develop fire safety regulations, fire safety operating procedures, fire extinguishing and emergency evacuation plans at the warehouse and/or place of work. Regularly conduct fire prevention inspections and patrols, promptly eliminate fire hazards, regularly organize fire extinguishing and emergency evacuation drills. Additionally, conduct fire safety inspections and assessments to ensure compliance with various rules and regulations.

6. Establish a mini fire department and a voluntary fire brigade. Train all employees to proficiently operate commonly used firefighting equipment and facilities, such as fire sand, fire blankets, fire extinguishers, fire hydrants, explosion-proof shields, etc. Additionally, establish a collaborative mechanism with government fire rescue teams to enhance the ability to extinguish initial fires.

7. Establish rescue agreements with local fire rescue agencies and organize joint fire drills.

8. Purchase property insurance for essential assets and worker’s compensation insurance for employees.

Part2: Fire Safety in the Production and Processing of Lithium Battery

1. Organize and conduct hazard identification and risk assessment by experienced and knowledgeable personnel, improve risk control measures based on the evaluation results, and ensure that risks are effectively managed and kept under control.

2. If any immediate danger and risk is discovered during the hazard and risk assessment process, the responsible personnel (including safety and health committee) shall immediately inform the employer or person in charge, without delay, to implement necessary changes or measures to mitigate or control potential accidental events.

3. Processes involving metallic lithium in lithium primary batteries, as well as high risk activities associated with fire and explosions in lithium-ion batteries, such as NMP coating, baking, liquid injection, resting, formation, and the charging and discharging of lithium-ion batteries, shall be isolated from other production areas and designated as key fire prevention areas. Regular fire inspections should be carried out in these areas to prevent fires.

4. Establish quality control standards for key processes. If defective products are automatically detected by equipment or identified by production and quality personnel, they must be placed in explosion-proof cabinets or designated areas that meet safety conditions for isolation. In the event of batch defects, the production line must be halted for timely rectification, with production resuming only after approval from the relevant fire safety personnel.

5. When assembling batteries, select the appropriate cells according to design requirements. Before assembly, the cells should be screened, graded, and paired according to open circuit voltage, AC internal resistance, and capacity to ensure optimal consistency. Additionally, implement the following hazard prevention measures:

5.1 Avoid factors that can damage lithium batteries, such as extreme short circuits, external impacts, compression, high temperatures, overcharging, over-discharging, direct soldering, damage to cell insulation, and undesirable thermal design, etc.

5.2 The equipment and facilities in the assembly workshop must be equipped with fixtures or other protective measures to prevent external short circuits and high-voltage arcs of lithium batteries. The tabletop of the assembly process should be insulated, and the exposed parts of metal tools in contact with electrical equipment (including mechanical arm clamps) should be insulated.

5.3 Operators are not permitted to wear metal jewelry, accessories, watches, or other items that could cause external short circuits in lithium batteries.

5.4 For the assembly of batteries, precautions should be taken to prevent the risk of direct current high voltage electric shock and burns, as well as the risk of external short circuit ignition of the battery.

5.5 Batteries should be equipped with effective voltage, current, temperature, and other protection devices.

5.6 Lithium-ion batteries used for energy storage or power battery systems should install a battery management system (BMS). The BMS control strategy must ensure that the energy storage and power battery systems meet the expected functional requirements throughout their full life cycle. And the BMS functional safety management should be implemented to comply with the corresponding ASIL level of ISO 26262.

5.7 It is prohibited to charge lithium primary cells. Testing equipment for lithium primary cells and lithium-ion cells should be used separately. Charging and discharging equipment should be equipped with error proofing, fool-proofing, and early warning alarm functions that can automatically stop operation in the event of any abnormalities.

5.8 Regularly verify and ensure that the safety protection features of the lithium-ion cell charging and discharging equipment software meet the expected requirements.

5.9 The reworked or repaired lithium batteries should be retested and verified as qualified before undergoing secondary processing or assembly.

5.10 Store lithium batteries away from high temperatures, flames and heat sources.

Part3: Fire Safety of Lithium Battery Storage

1. The internal decoration and walls of the warehouse storing lithium batteries must be constructed with fire-resistant and non-combustible building materials, designed to serve as fire breaks and provide heat resistance prevent fire spread. It is strictly prohibited to use foam-core color steel plates and other building materials that are

explicitly prohibited. In the High Racked Storage Warehouse of lithium battery, it is recommended to use an Early Suppression Fast Response (ESFR) Sprinkler system.

2. Lithium batteries should be stored separately from chemicals and flammable materials, with defective lithium batteries kept apart from those in good condition. The temperature and humidity conditions of the lithium battery storage site should comply with the product specifications and spacing requirements. The spacing requirements are as follows: the distance between each stack must be at least 1 meter; the distance between goods and walls must be at least 0.5 meters; the distance between stack and pillars or the ceiling must be at least 0.5 meters; the distance between goods and lights must be at least 0.5 meters; and the width of the main channel inside the storage place must exceed 2 meters. Lithium batteries should be classified and divided into designated piles with limited storage capacity. Each stack should cover an area not exceeding 50 square meters. If permitted, lithium battery storage facilities should be equipped with independent fire compartments or standalone buildings.

3. The places where lithium batteries are used and/or stored should be inspected for fire prevention at least once a day. During nighttime, mealtimes, weekends, holidays, and other special occasions, safety monitoring and patrol in these places should be intensified.

4. When storing lithium batteries, they should be individually fixed and isolated in their original packaging. Avoid using packaging methods that allow lithium batteries to come into contact with one another.

Part4: Transportation Safety of Lithium Battery

1. Lithium batteries must be transported in packaging and vehicles that complies with regulatory standards, and shall only be transported with the approval of the relevant authority. Before loading and unloading, the integrity of the lithium battery packaging should be thoroughly inspected. If any obvious defects, such as damage, leakage, or moisture are detected, relevant personnel should be contacted promptly for proper handling.

2. When wooden and fiberboard boxes are fastened with nails, they should be firmly nailed and compressed, ensuring the box remains intact, with the nail points bent over and neither the points nor the heads protruding. The packaging box should be intact and undamaged, the seal should be flat and firm, and the box body should be tightly secured with packing tape for secondary reinforcement.

3. The upper and lower layers of lithium batteries should be separated by non-conductive materials to prevent

contact with conductive materials, which could lead to short circuits within the same packaging.

4. Personnel engaged in the transportation of lithium batteries should receive safety training, familiarize themselves with the hazardous characteristics of lithium batteries, transportation loading and unloading safety requirements, and disposal measures in case of accidents.

5. The technical requirements for lithium battery transport vehicles should comply with the relevant provisions of the regional laws and regulations, and be equipped with emergency response equipment (such as water-based fire extinguishers, fire blankets, etc.) and safety protection equipment (such as high-temperature resistant gloves, smoke masks, etc.)

6. The loading and unloading of lithium batteries must strictly follow the operating procedures, with careful handling. It is strictly prohibited to drop, collide, press heavily, or invert the lithium batteries. When loading, batteries should be neatly stacked according to the upward markings, with height and weight limits, and securely tied to prevent loss or displacement.

7. When transporting lithium batteries, the vehicle should control its speed, maintain a safe distance from the preceding vehicle, avoid illegal overtaking, and try to avoid situations such as sharp turns, sudden braking, and severe bumps. These precautions help prevent the goods from being impacted or squeezed by external forces, ensuring driving safety.

8. For storage, processing, in-plant transportation, land transportation and sea transportation, the state of charge (SOC) of the Nickel Cobalt Manganese (NCM) cells should not exceed 30%, while the SOC of lithium iron phosphate (LFP) cells and consumer batteries should not exceed 70%. When transported by air, the SOC of lithium-ion cells should not exceed 30%.

Part5: Disposal Safety of Lithium Battery

1. The disposal of lithium batteries should comply with local laws, rules, regulations and guidelines issued by the relevant authorities from time to time.

2. Personnel engaged in the disposal of lithium batteries should receive professional training, understand the characteristics and safety requirements of lithium batteries, ensuring standardized and safe operation.

3. Lithium batteries must undergo safety pre-treatment before being scrapped to eliminate residual power. Lithium batteries with undamaged appearance can be discharged using external circuits such as specialized discharge equipment, discharge resistors, or conductive media; for Lithium batteries with damaged appearance, they can be discharged by soaking them in water, but measures need to be taken to prevent the cell housing from contacting each other and short circuiting. It is important to pay attention to the following:

3.1 Soak the lithium primary cell in a 5% sodium hydroxide solution and the lithium-ion cell in a 5% sodium chloride solution until completely discharged, then remove and drain.

3.2 NCM cylindrical lithium battery packs are prohibited from direct water immersion discharge. If water immersion discharge is necessary, a risk assessment must be conducted to develop a specialized plan. The battery pack should be disassembled into modules and soaked outdoors.

3.3 The treatment of residues and soaking solutions generated after soaking and discharging must comply with local regulatory requirements.

4. If disassembly of lithium batteries is necessary, a disassembly operation procedure or disassembly operation manual should be developed according to the information provided by the production enterprise. Disassembly of lithium batteries must be conducted in a manner that prevents risks of direct current high voltage electric shock and burns, as well as the risk of mechanical shock and fire of the battery. Mechanized or automated disassembly methods should be adopted.

5. The dismantling site for lithium batteries should meet safety requirements, and dismantling personnel should wear safety protective equipment before operation.

Part6: Emergency Response to Thermal Runaway of Lithium Battery

1. Thermal runaway of lithium batteries is typically characterized by a sharp increase in temperature, which may be accompanied by signs such as valve leakage, expansion, deformation, smoke, fire, or, in severe cases, explosion.

2. To effectively handle thermal runway incidents, it is essential to identify potential thermal runaway scenarios

for lithium batteries at various stages and develop emergency response plans. These plans should include specific disposal strategies as outlined in the table provided:

<table>
<tr><td>Scenes Classification</td><td colspan="2">Emergency response strategy</td></tr>
<tr><td rowspan="3">When a few lithium batteries are heating up, emitting smoke, or catching fire</td><td>Lithium primary cell / lithium-ion cell</td><td>Emergency personnel should wear impact masks, high-temperature gloves, and use explosion-proof shields. Extinguish fire using water-based fire extinguishers, fire sand, and fire blankets to extinguish fires. Prioritize using water-based fire extinguishers to extinguish and cool down, and then use fire tongs or other tools to transfer the battery to an explosion-proof bucket filled with fire sand.</td></tr>
<tr><td>Li-$SOCl_2$ cell</td><td>The severe phenomenon of thermal runaway in Li-$SOCl_2$ batteries can lead to battery explosion, and special attention should be paid to prevent the spread of fire caused by splashing objects or flying fires from the explosion.</td></tr>
<tr><td>Lithium primary battery / lithium-ion battery</td><td>Adopt the principle of continuous water spraying in situ for cooling, use a thermometer to monitor in real time until the temperature drops below 60 ℃ and remains stable.</td></tr>
<tr><td>When a large number of lithium batteries, a large lithium battery catches fire, or a significant scale fire occurs in a lithium battery warehouse.</td><td colspan="2">Immediately activate the emergency plan and evacuate personnel. After cutting off the power and confirming that there are no water sensitive items present at the accident site, consider spraying a large amount of fire water to cool down and extinguish the fire.
reference resources:
1）Notice on Issuing Fire Fighting and Rescue Regulations for New Energy Vehicles and Safety Points for Fire Fighting in Lithium Battery Production, Storage and Use Sites (Ministry of Public Security of the People’s Republic of China, 2016)；
2）Emergency Field Guide of Alternative Fuel Vehicles Safety Training Program (US National Fire Protection Association, 2018)</td></tr>
</table>

3. Given the potential for reignition after extinguishing a lithium battery’s fire, please store the damaged battery at least 15 meters away from the buildings, vehicles, or other flammable materials to mitigate further risks.

Part7: Passenger or commercial vehicles equipped with lithium-ion cells should comply with local regulations and integrate safety measures that enable passengers or external rescuers to effectively evacuate in case of an emergency.

Part8: Electronic products, two-wheeler, and energy storage facilities utilize lithium batteries should comply with local regulatory requirements.

Unless the context otherwise requires, a reference to a statute, regulation, proclamation, ordinance or by law includes all statutes, regulations, proclamations, ordinances or by laws which amend, consolidate or replace it, and a reference to a statute includes all regulations, proclamations, ordinances and by laws which are issued under it.

[Terms and definitions]

1. Lithium battery： A broad term for all batteries or battery packs containing lithium in their electrochemical systems, including lithium primary cells, lithium primary batteries, lithium-ion cells, and lithium-ion batteries.

2. Cell： The basic functional unit that directly converts chemical energy into electrical energy, consisting of electrodes, electrolytes, containers, terminals, and typically separator, is also known as a single cell. Except for the exclusive term 'lithium battery', all batteries mentioned in this article refer to individual cells, such as lithium primary batteries and lithium-ion batteries.

3. Battery：A combination of any number of individual cells containing a protective circuit.

4. Lithium primary cell：A type of [non-rechargeable cell] where the anode is made of lithium metal or lithium alloy, and the cathode is made of other materials such as manganese dioxide. It uses a non-aqueous electrolyte containing lithium salt and cannot be charged. Examples include lithium manganese batteries and lithium thionyl chloride batteries (referred to as " Li-$SOCl_2$ batteries" in the text).

5. Lithium primary battery：A battery pack composed of lithium primary cells.

6. Lithium-ion cell： A device containing lithium ions that can directly convert chemical energy into electrical energy. The device includes electrodes, separators, electrolytes, containers, and terminals, and is designed as a rechargeable secondary battery. Examples include lithium cobalt oxide batteries, lithium iron phosphate batteries,

and ternary lithium batteries, etc.

7. Lithium-ion battery： A battery pack composed of lithium-ion batteries. It is a collective term for lithium-ion battery modules, lithium-ion battery packs, and lithium-ion battery systems.

8. Lithium-ion battery module： A combination of more than one lithium-ion battery, arranged in series, parallel, or series parallel configuration, with only one pair of positive and negative output terminals, and used as a power source.

9. Lithium-ion battery pack： Usually includes lithium-ion battery modules, battery management modules (excluding BCUs), battery boxes, and response accessories, with units that can obtain electrical energy from the outside and output electrical energy externally.

10. Lithium-ion battery system：An energy storage device consisting of one or more lithium-ion battery packs and corresponding accessories (management system, high voltage circuit, low voltage circuit, thermal management equipment, mechanical assembly, etc.).

EVE Energy Co., Ltd.

September 6, 2024