



Standards of Care at Warehouses Storing Lithium-ion Batteries and Products that Include Them

Considerations for Shippers and Carriers

Increasingly, lithium-ion batteries are being used and designed into consumer goods e.g. laptops, tools and toys. Shipping and warehousing lithium batteries in bulk or the products that include these batteries (e.g. cell phones, laptops, tools, toys) in their end product require a few more precautions than those packaged with more traditional nickel cadmium batteries.

For lithium battery transportation the United Nations has clear guidance on testing and criteria to be met for safe transportation¹, but warehouse storage dockside is not addressed.

The following recommendations and considerations aim to help shippers and carriers in their warehousing choices and decision-making.

Recommendations:

1. Develop strict quality control procedures to identify, segregate and quarantine lithium batteries, products or packages, with the potential for an increased safety risk based on visible inspection and temperature monitoring, e.g., using an infrared thermometer dockside
2. Inspect cargo being unloaded carefully, looking for situations where:
 - a. Goods are not packed in their original packing
 - b. Packaging is damaged
 - c. State of Charge (SoC) is higher than 50% (red flag!)
3. Separate and do not warehouse any products or packages found to be heating, visibly damaged, mishandled, impacted, or dropped. If found, these products/packages should be segregated to a separate storage area and a quality control evaluation should be made before approval for reloading. Note, these products may now present an increased safety risk and must meet the requirements for defective, damaged, waste or recycling. For example, ensure that the warehouse has the equipment and means to store damaged batteries in a safe, segregated area well away from the remainder of the stock.
4. In general, store battery packs in an area separated from the remainder of the warehouse.
5. Store battery packs in original packing, unless packing has been opened for order picking.
6. Do not stack pallets of Lithium-ion batteries, other than in a racking system.
7. Ensure the storage facility has an approved, continuously-monitored fire detection system per NFPA* 72 or equivalent.
8. When possible, choose warehouses with an automatic sprinkler system designed and installed per NFPA 13 or equivalent with hose stations installed per NFPA 14 or equivalent.
9. Require daily visual inspections e.g. thermographic (infrared) scanning.

For further information, please contact your local Marine Risk Consultant.



1. "Dangerous Goods | UNECE." 01 Sept. 2020, <https://unece.org/transport/dangerous-goods>.

NFPA 13: Standard - Sprinkler System Installation

NFPA 14: Standard for the Installation of Standpipe and Hose Systems

NFPA 72: National Fire Alarm and Signaling Code®

*While NFPA documents are the global standard used by AIG, international equivalents may be acceptable.

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