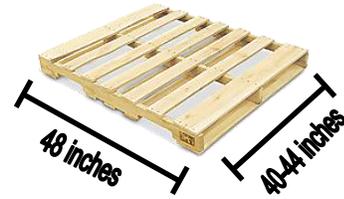
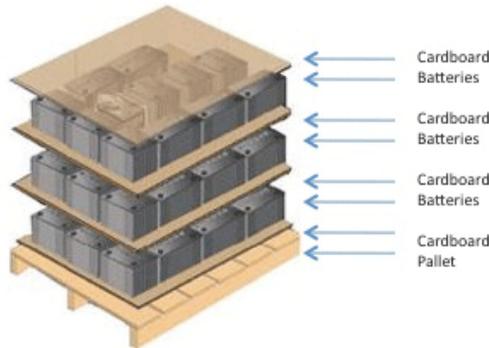


## Important Pallet and Packaging Specifications:

1. Maximum pallet sizes: 40" x 48" or 44" x 48"



2. Maximum layers per pallet: 3 – roughly 24 batteries/layer = 72 batteries for 3 layers.



Lead acid batteries must have a layer cardboard separating each level.

This includes a layer of cardboard on the bottom and the top of the load.

3. Typical Pallet Weight (for 3 layers): *Between 2800 and 3300 lbs – Pallets are not to exceed 3300 lbs.*
4. Only lead-acid batteries may be packaged: *No mixing in other batteries or recyclables.*
5. Pallet must be built with a minimum of **3** bottom boards and durable enough to handle the weight of the batteries.

This pallet has 3 bottom boards



## Instructions for Stacking Lead Acid Batteries on a Pallet

1. Select a sturdy pallet with no broken or missing boards. Be sure there are no nails sticking out, which could puncture the batteries or pose a safety hazard.



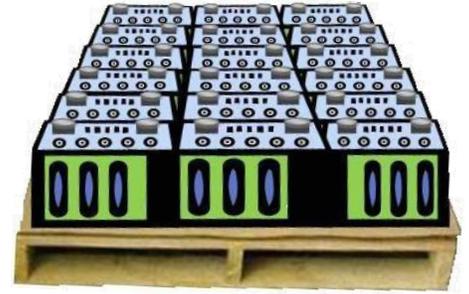
An example of a typical wood pallet

2. Place a layer of cardboard on the pallet to create a flat work surface and help prevent batteries from sliding off of the pallet.



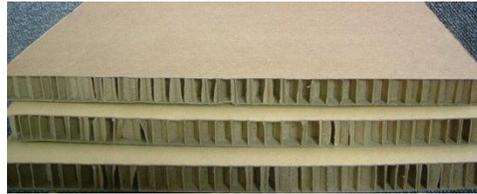
A pallet with a layer of cardboard

3. Make the first layer of batteries as level and as close together as possible.
  - If some of the batteries are shorter, they should be placed in the center of the layer.
  - Batteries that are relatively taller should be saved and placed on the top layer (if stacking more than 1 layer).
  - Ensure no batteries are hanging over the edge of the cardboard/pallet.



Single layer of batteries

4. Place cardboard (multiple sheets if necessary) between each layer of batteries.
  - It is best to use the thick honeycomb cardboard (if available).



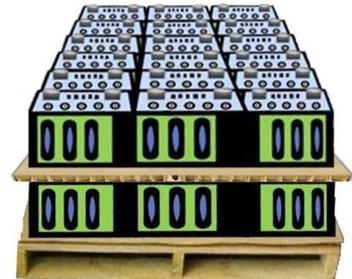
Examples of honeycomb cardboard

- Alternatively, multiple layers of cardboard can also be used.



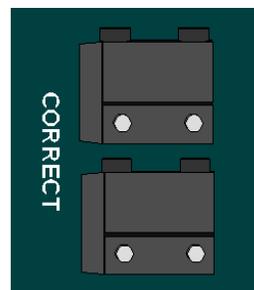
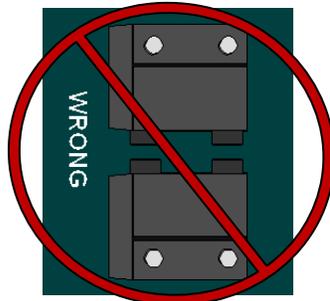
Examples of layers of typical cardboard

- Enough layers of cardboard must be applied to achieve the following:
  - Prevent the possibility of short circuits; and
  - Prevent the terminals from puncturing the underside of the batteries in the layer above.

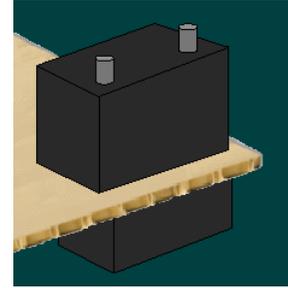


2 layers of batteries with honeycomb cardboard separating the two layers

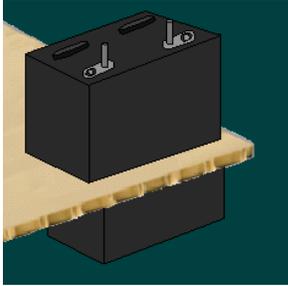
**Note #1:** Side terminal batteries must be stacked so the posts are facing away from each other and not facing towards the outside of the pallet. Side terminals must never touch (below displays overhead views of “Side Terminal Batteries”).



**Note #2:** Top posts must be positioned toward the outside of the pallet so the layer above it leans toward the center. Make sure that no batteries are overhanging the cardboard.



**Example:** The top battery has the terminals positioned toward the outside of the pallet.



**Note #3:** Stud post batteries (such as Marine Batteries) should be on the top layer. If this is not possible, you will need extra layers of cardboard between the layers of batteries to prevent punctures. This is also important when stacking three layers high.

**Example:** The top “stud post” battery has its terminals positioned toward the outside of the pallet, and would need extra layers of cardboard to prevent puncturing the next layer of batteries.

- A maximum of 3 layers of batteries may be placed on a pallet. When stacking is complete, place cardboard on top of the final layer of batteries.



**3 layers of batteries with a layer of cardboard on top.**

- Any battery that has been damaged and has the potential to leak must first be placed in a container capable of holding its contents.



Examples of damaged lead acid batteries

- Damaged batteries that are not visibly leaking electrolyte should be put in heavyweight polyethylene plastic bags (minimum: 6 mil), properly sealed with plastic tie, and placed in the middle of the top layer.
- Damaged batteries that have the potential to leak must be placed in a container that is capable of holding its contents (i.e. will not leak fluid) such as a DOT approved 5- gallon bucket.



An example of a DOT approved 5-gallon container

## Instructions for Wrapping Pallet

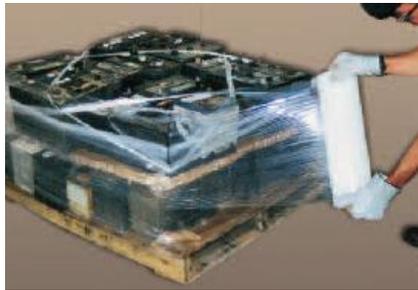
All batteries should be secured to the pallet with stretch wrap. An 80 gauge (or stronger) stretch wrap is recommended. Stretch wrap works best if it is pulled tight before stretching it around the corners.

1. Start with the stretch wrap turned sideways to create a “rope-effect”. Wrap around the top layer twice.\*
2. Using the rope-effect, wrap the top layer twice\* more, each time crossing over the top to form an “X-pattern.” This should pull the batteries towards the center, preventing batteries from falling off of the pallet.



Creating a “rope-effect” with stretch wrap

3. Holding the stretch wrap open, wrap around the bottom layer twice\*, being sure to catch the edges of the pallet.



Holding the stretch wrap open



3 layers of batteries wrapped up

4. After placing a layer of cardboard on top of the batteries, wrap around the top layer at least twice\* and tear-off the stretch wrap at the last corner.



Fully wrapped pallet of batteries

**\*Note:** After wrapping twice (during each step) judge the load; wrap as many times as necessary to stabilize the load.

5. To further secure the load, band the material to the pallet.

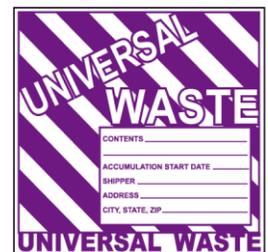


A wrapped and banded pallet of lead acid batteries (3 levels)

6. Finally, ensure the pallet is properly labeled. At minimum, the pallet should include a #8 Corrosive and a Universal Waste Label. Check with your transporter to see if any additional labeling is required.



Ex: #8 Corrosive Label



Ex: Universal Waste Label