



# Dos and Don'ts of Packaging E-waste for Safety and Reuse

By Garten Services

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## Reuse vs. Recycle

- Garten and the State of Oregon goal for electronics is to refurbish for reuse as much as possible.
- Reuse is dependent on the condition of received electronics.
- Items that are too damaged and have no refurbish/reuse value are sent to a downstream vendor for recycling.
- The difference is large as reuse is always identified as being more sustainable; better for the environment.
- Help us recover for reuse the maximum number of “stuff” we can rather than sending it for destruction to an end of life recycler.

# Heavy Items On Bottom

Items such as servers, large printers and/or big CRT TVs should be packaged on the bottom or have their own pallet.

- Heavy items on top can easily damage fragile materials that may be dangerous if broken or crushed such as glass and lithium batteries.
- Damaged items are not refurbish-able for reuse.
- Heavy items on top make the pallet or gaylord unbalanced, making it difficult to move when needed.



# Dangers of Oversized Pallets

Oversized pallets are difficult to maneuver and can snag on other pallets/gaylords causing materials to fall off.

- This can damage products and also cause injury.

< The example on the left shows an oversized pallet where materials are sticking out about 6 inches to the side.

>Example on the right shows the box is overstuffed, so the box is deformed.

The side is ripping from too much volume and weight.





# Dangers of Having Fragile Items on Bottom



Stacking fragile items on the bottom of a pallet or gaylord may cause damage to items and can make them not reusable.



In certain instances, this may result in the breakage of devices creating situations involving the potential for broken glass and other fragments to become a hazard when unpacking.

# LCD & Flat Monitors Should Not be Tossed into a Gaylord

- Certain flat monitors utilize Compact Fluorescent Lamps (CFLs) for backlighting, and improper disposal into a gaylord container may result in the breakage of these backlights, which can pose a risk of mercury exposure to personnel.
- Even in the absence of careless tossing, without the meticulous adherence to proper stacking procedures, it is anticipated that a substantial portion, if not the entirety, of these monitors will incur damage, rendering them inoperable and unsuitable for use.



# Examples of Poorly Packaged E-waste:





# Proper Packaging

The following slides are examples of packaging that will help protect the items, protect workers, help better ensure that items and devices are in a condition to be refurbished for reuse.



# Straight Up from Pallet

Always stack *stackable* materials straight up from pallet

As you can see here by just following the pallet you can avoid overhang





# Corner Protectors

To mitigate the risk of overhang, use corner protectors when needed.

This measure ensures upright and secure packing and safeguards against potential injury by covering protruding sharp corners.

# Packing Monitors

- Monitor stands should be removed and shipped separately.
- The monitor must be packaged in a box from screen bezel to screen bezel (face-to-face) to decrease the possibility of damage.
- Boxes should be palletized in a single layer for transit safety.





## Heavy Items: Servers

- Most servers/ heavy networking equipment should be stacked on its own pallet.
- To help prevent movement, wrap pallet in plastic wrap and use corner protectors.

# Heavy items: Battery Packs/UPS

- To enhance stability and prevent movement, use plastic banding in conjunction with corner protectors when stacking heavy electronics such as servers.
- Battery packs are very heavy and should have their own pallet.



# Heavy items: TV Pallets

- TV pallets often exhibit some degree of overhang. However, if wrapped properly, then it will be safe for transit.
- CRT and flat screen televisions placed individually on pallets, instead of gaylords, effectively minimize unwarranted damages to the TVs and anything that would have been in that gaylord container.





# Boxed and Palletized Laptops

- Upright side-by-side stacking of laptops in boxes mitigates potential harm to screens and batteries. This approach enhances safety for truck drivers and sorters and promotes the preservation of laptops for potential reuse.
- Additionally, when dealing with oversized pallets that pose challenges in facility doorways, the organized stacking of laptops within boxes proves to be highly advantageous for drivers during cage stacking.

# Laptops Should Not be Stacked Too High

- Stacking laptops too high may cause damage to the screens making them unusable.
  - Too much weight on top of each other may cause the lithium batteries to swell, which can damage their protective outer layer exposing them to the moisture in the air.
- When a pallet with stacked laptop is opened to be worked on, there is a significant likelihood of laptops dispersing onto the floor, thereby posing a potential slip, trip, or fall hazard and damage to the laptop is likely.







# Always Use a Labeled Box

- Don't send items in a plastic bag. It is difficult to see what is inside
- Labeled boxes will help staff understand what's inside and easily prevent injury.
- This will also in some cases help the organization with inventory to not accidentally send unwanted materials.
- Boxes are reusable and highly recyclable



# Reuse

- Phones, Tablets, and devices should be Admin and User Unlocked for reuse.
  - If they are not unlocked, they are not refurbishable and are sent for recycling.
- For complete safety of your data, Garten ensures all devices are cleared using the NIST 800-88 software and verified effective using third party software.
- Do not drill or puncture devices that contain batteries.
  - Lithium is a commonly found battery in electronic devices and can be extremely flammable when punctured or damaged.
  - Let us know in advance of swollen batteries, so they may be handled and repackaged appropriately and immediately upon arrival. This will minimize the chance of a lithium fire.



For further questions regarding reuse or packaging e-waste, please contact us below:

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