

Stacking materials can be dangerous if workers do not follow safety guidelines. Falling materials and collapsing loads can crush or pin workers, causing injury or even death.

Other hazards include:

- Back injuries due to improper lifting techniques
- Struck-by material or equipment hazards
- Caught-in or pinch point material handling injuries
- Damage to racking systems and inventory
- Injuries due to incorrectly cutting ties or securing devices

Material stacking safety begins with these basic guidelines:

- Stack loads on a level surface, straight and even.
- Place heavier loads on lower or middle shelves.
- Maintain good housekeeping.
- Keep aisles and passageways clear.
- Use proper lifting techniques.

OSHA Standard 1926.250(a)(3) *Aisles and passageways shall be kept clear to provide for the free and safe movement of material handling equipment or employees. Such areas shall be kept in good repair.*



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- Stack **drums, barrels, and kegs** symmetrically.
- Place planks, sheets of plywood dunnage, or pallets between each tier of drums, barrels, and kegs to make a firm, flat, stacking surface when stacking on end.
- When stacking two or more tiers high, chock the bottom tier of drums, barrels, and kegs on each side to prevent shifting in either direction.
- If stored on their sides, block the bottom tiers of drums, barrels, and kegs to keep them from rolling.

OSHA Standard 1926.250(a)(1) *All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling or collapse.*

- All **lumber** should be stacked in such a way that is stable and self-supporting.
- Remove all nails from used lumber before stacking.
- Stack and level lumber on solidly supported bracing.
- Stack lumber no more than 16 feet high if it is handled manually, and no more than 20 feet if using a forklift.

- Band **boxed materials** or secure them with cross-ties or shrink wrap.
- Interlocking boxes will create a more stable stack.
- For stability, boxes can be placed on a pallet which will also make them easier to move.

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- Stack **bags and bundles** in interlocking rows to keep them secure.
 - Stack bagged material by stepping back the layers and cross-keying the bags at least every ten layers. Then, to remove bags from the stack, start from the top row first.



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- Do not store **pipes and bars** in racks that face main aisles to avoid creating a hazard to passersby when removing supplies.
 - Unless they are in racks, stack and block poles, structural steel, pipe, bar stock and other cylindrical materials to prevent spreading or tilting.
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- Stack loose **bricks** no more than 7 feet in height.
 - When brick stacks reach a height of 4 feet, taper them back 2 inches for every foot of height above the 4-foot level.
 - When **masonry blocks** are stacked higher than 6 feet, taper the stacks back one-half block for each tier above the 6-foot level.

When stacking, consider the height restrictions, clearance limits, maximum safe load limits as well as the need for availability of the material.

- Signs should be posted to remind workers of stacking height limitations and clearance limits.
- For quick reference, walls or posts can be painted with stripes to indicate maximum stacking heights.
- The weight of stored materials on floors within buildings and structures shall not exceed the maximum safe load limit.
- Whether stacking manually, or by forklift, allow sufficient clearance around materials for easy access and safe handling. Don't forget to consider the additional clearance that may be required around lighting, pipes, duct work, electrical lines, and sprinkler heads.
- Material should never block access to emergency exits, fire extinguishers or fire alarms.



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When stacking materials with a powered industrial truck:

- Center the load on the forks as close to the mast as possible to minimize the potential for the truck tipping or the load falling.
- Avoid overloading because it impairs control and may cause a tipping.
- Do not place extra weight on the rear of a counterbalanced forklift to allow an overload.
- Adjust the load to the lowest position when traveling.
- Pile and cross-tier all stacked loads correctly when possible.

Stacked materials and storage areas must not create a hazard for workers.

- Storage areas should be kept tidy to ensure that there are no hazards that could lead to tripping, fire, explosion, or pest infestations.
- Store baled paper and rags inside a building no closer than 18 inches to the walls, partitions, or sprinkler heads.
- Do not store materials on scaffolds in excess of supplies needed for the immediate task.
- Excessive vegetation should be removed from building entrances and work areas to prevent possible trip or fall hazards.
- Personnel must use proper lifting techniques to prevent injury.

OSHA Standard 1926.250(c) *Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Vegetation control will be exercised when necessary.*



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