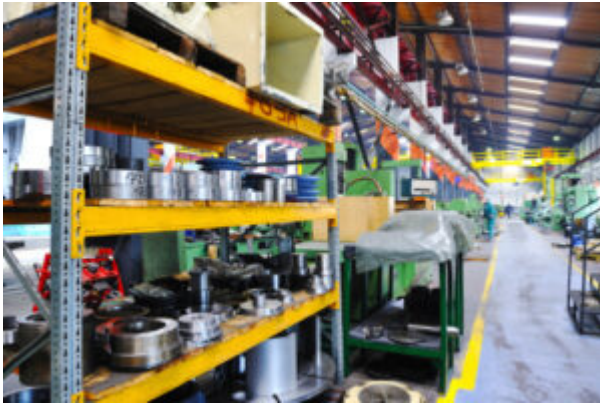


# 6 Steps to Comply with Material Storage Requirements



When we talk about materials handling, we usually focus on safely transporting such items, whether manually or using equipment such as forklifts. But it's just as important to ensure that once the materials arrive at their destination, they're safely stacked or otherwise stored so that they don't move, roll or collapse and endanger workers. So here are six steps you should take to comply with the storage requirements for materials in the workplace.

## Defining Our Terms

This article discusses the general storage requirements in the OHS regulations for materials such as wood, pipes, supplies, crates, boxes, etc.'not any specific requirements for hazardous materials such as hazardous substances, explosives, batteries or gas cylinders. For hazardous substance storage requirements, see 'HAZARDOUS SUBSTANCES: Take 6 Steps to Comply with Storage Requirements.'

### Rack Inspection Checklist

Download this checklist you can use to inspect storage racks in your workplace to ensure that they're safe to use.

## Take These 6 Steps

The OHS regulations in each jurisdiction address safe storage of materials. Some jurisdictions simply require employers to ensure that materials are stored securely or so they don't create a safety hazard or danger to workers. Others contain very detailed storage requirements. You should consult and comply with the specific storage requirements under your jurisdiction's OHS regulations. But in general, employers should take the following steps to comply with materials storage requirements. Click to reveal more information:

[learn\_more caption="Step #1: Use Proper Storage Racks"]

Storage racks are commonly used to store materials in warehouses, distribution centres, retail stores and manufacturing plants. But if these racks are

improperly installed or used, or become damaged in some way, they can endanger workers. According to the Guide to Part 12 of the Alberta *OHS Code 2009*, the leading causes of storage rack system failure, alone or in combination, are:

- Poor storage rack design—that is, the rack is inherently unsafe;
- Incorrect installation and assembly;
- Using the wrong material handling equipment to load and unload items in the storage system;
- Operator error when using material handling equipment; and
- Structural problems with the floors or walls of the storage area, such as overloaded supporting structures or floors that aren't sufficiently level.

So, ensure that any racks you use to store materials in your workplace are:

- Designed, assembled and maintained to support the weight of the materials they're expected to carry. Most manufacturers provide a safe load or working limit for their racks;
- Placed on a firm and level foundation;
- Adequately anchored or braced depending on their height so that they don't tip over; and
- Able to support the loads placed on them if used outdoors and exposed to wind, wind gusts and other environmental conditions.

In addition, you should regularly inspect storage racks, shelving, etc. for damage and other defects that might impact their ability to safely store materials. For example, make sure the uprights aren't twisted or out of plumb and check the beams or shelves for sagging or deflection, which could indicate they're being overloaded. In addition to regular inspections, always inspect racks after any equipment such as forklifts has crashed or knocked into them. Repair any damage identified in these inspections or replace the damaged parts if necessary.

### **Rack Inspection Checklist**

Download this checklist you can use to inspect storage racks in your workplace to ensure that they're safe to use.[\[/learn\\_more\]](#)

[\[learn\\_more caption="Step #2: Ensure that Stacks of Materials Are Safe"\]](#)

If materials aren't stored on racks, they may be stored in stacks or piles. The OHS regulations require you to ensure that such stacks don't endanger workers. For example, employers are generally required to:

- Brace, strap, cross-tie or otherwise restrain stacked materials or containers to prevent them from collapsing or falling from the pile;
- Ensure that stacks aren't piled to a height that could endanger the stack's stability;
- Stack boxes or crates on the sides with the largest surface area; and
- Avoid overloading floors or structures on which piles or stacks are located.[\[/learn\\_more\]](#)

[\[learn\\_more caption="Step #3: Take Extra Care Storing Certain Materials"\]](#)

Certain materials that pose an especially high risk of endangering workers if they're improperly stored, such as materials that can roll or loose/bulk

materials, may be subject to specific or additional storage requirements. So make sure to check your OHS regulations for such requirements and comply with them. The most common materials subject to specific requirements include:

### **Bulk Material**

Bulk or loose material such as gravel, feed or salt is usually subject to additional requirements depending on whether it's stored in:

- *A bin or hopper.* Bins or hoppers used to store bulk material should be designed so that the material is removed from the bottom. If the material is combustible, the bins or hoppers should have lids and adequate ventilation and be fire resistant.
- *A pile.* When bulk material is simply stockpiled and will be removed by the use of powered mobile equipment, the working face of the material should be sloped at an angle of repose. There may also be limits on the vertical height of the working face of the material with respect to the maximum reach of the equipment.

### **Bricks or Masonry Materials**

Masonry materials such as bricks are often stored in stacked piles. The OHS regulations may limit the height of these piles or require that over a certain height, the tiers must be progressively stepped back from the vertical face and supported by wooden strips. In addition, you may have to place stacks of masonry materials on wooden planks, platforms or other level bases.

### **Bagged Materials**

Stacks of bagged material such as soil should be stabilized or cross-tied to prevent movement. In addition, the bags should be placed with the mouths of the bags facing inwards. And you may need to step back the tiers of bags depending on the height of the stack.

### **Pipes, Bars or Other Round Objects**

Round objects such as pipes, rolls of paper and bars pose a unique safety hazard because they can roll. Failing to block such objects to prevent them from rolling can have tragic consequences.

**Example:** A worker in Ontario was acting as signaler for a crane unloading drill casings from a truck. Three large, cylindrical casings were stacked on the ground in a pyramid. The bottom two casings weren't chocked to prevent movement. While a fourth casing was being unloaded from the truck, the top casing in the pyramid fell between the two casings holding it up, pushing the bottom casings outward. One of those casings rolled and hit the fourth casing that was still suspended by the crane, which struck and killed the signaler. The company pleaded guilty to failing to ensure that the bottom row of the pyramid of casings was chocked or wedged to prevent motion and was fined \$110,000 [ECA Canada Co., Govt. News Release, March 6, 2013].

So in general, round objects should be stored on racks that prevent them from rolling. But if they must be stacked or piled, you should stack them in layers on wooden strips with stop bars on the ends or on metal bars with upturned ends. And use blocks, chocks or wedges to prevent the bottom layers from moving.

## Barrels or Drums

Barrels, drums or kegs that are piled on their ends should have two parallel planks placed on top of each row before another row is added. And these piles should be kept low.[/learn\_more]

[learn\_more caption="Step #4: Ensure Storage Area Itself Is Safe"]

It's not enough to ensure that the racks or piles of materials are safe; you must also ensure that the areas around them are safe. For example, storage areas or locations where materials are dumped or spilled into piles should be specifically designated, clearly marked and possibly barricaded or guarded. In addition, piles or stacks of materials shouldn't:

- Be located underneath energized electrical power lines;
- Be placed near the edge of an excavation, floor opening or open edge of a roof or floor;
- Interfere with or block lighting; ventilation; doors or windows; passageways or traffic lanes; the operation of machines; sprinklers and firefighting equipment; and electrical panels; and
- Rest against walls or partitions unless the walls or partitions are strong enough to support the load.

Many of the above requirements can also apply to storage racks. For instances, racks, shelving and the like should be laid out so there's sufficient access for safe loading and unloading. The aisles between racks should be wide enough for the safe operation of powered mobile equipment and kept free of obstacles. And racks shouldn't interfere with sprinklers or other firefighting equipment.[/learn\_more]

[learn\_more caption="Step #5: Implement Safe Storage Rules and Practices"]

It's important to create and implement rules and practices for the safe storage of materials and safe removal of those materials from storage. For example, warn workers not to stack materials too high or overload racks beyond their safe load limits. Your rules should also bar the storage of incompatible materials together and require heavier materials to be placed on bottom shelves of storage racks. And require workers to report any damage to such racks as soon as is practical.[/learn\_more]

[learn\_more caption="Step #6: Train Workers on Safe Materials Storage"]

As is always the case with any safety topic, you must train workers on safe materials storage. Such training should typically cover, at a minimum:

- Your materials storage rules and procedures;
- The OHS requirements that apply to materials stored in your workplace;
- Any manufacturers' recommendations for storage racks, especially as to their installation and safe load limits;
- Safe operation of mobile equipment, such as pallet trucks, in and around racking;
- Regular inspections of racks; and
- Procedures for reporting the damage to racks or unsafe storage conditions.[/learn\_more]

## **The Bottom Line**

It's true that workers are more likely to get injured when handling materials on the job than as a result of how those materials are stored. But as the Ontario case mentioned above illustrates, poor materials storage practices can create serious safety hazards. So don't take materials storage requirements lightly. By following the six steps outlined in this article, you should be able to ensure that your company complies with such requirements and prevents similar incidents from happening in your workplace.