

# Material Stacking Safety & Compliance Game Plan



0

Things Safe Stacking Policies And Practices Must Address

## Stacking Safety Is a Matter of Life & Death

Large and heavy wood panels weighing about 1,200 lb/545 kg apiece are stacked on edge in a storage container with the center panels supporting the panels against the wall. A worker tries to move some of the panels without any help. In removing panels closest to the container, he leaves the panels closer to the wall free standing on edge. They fall on the worker, hitting him in the chest and pinning him to the ground. By the time somebody finds him, he's suffocated to death.

Workers get killed and seriously injured when materials in the workplace aren't safely stacked. Hazards include:

- Falling objects;
- Contacting electrical wires or sources;
- Hazardous chemical spills;
- Getting caught in pinch points;
- Struck-by injuries;
- Back and other injuries due to improper stacking techniques;
- Fire and explosion; and

- Trips and falls.

Improper and dangerous stacking practices can also result in property damage, inefficiency and OHS violations. While [OHS rule specifics](#) vary by jurisdiction, the general rules are pretty much the same everywhere: Materials must be stacked in a safe and suitable location and in a stable and secure way that won't endanger a worker or anybody else in the workplace. To comply, it's essential to create and implement [a policy](#) to ensure safe stacking practices at your workplace. Here are the 10 things such a policy must address.

## **1. Floors & Supporting Surfaces**

Start with the floor or surface under the stacks. First, they must be capable of supporting the weight imposed upon them. That may require having a competent person determine the loading capacity of floors and surfaces upon which materials will be stacked. Those loading capacities should be clearly marked and never exceeded. Floors and surfaces should also be level and stable to minimize risk of tip-over and objects falling from the stack.

## **2. Racks & Storage Structures**

Racks, shelves and structures must be adequately designed and constructed to hold, support and contain the stacked materials. They should be made of noncombustible, sturdy materials that won't easily corrode or retain water. Ends of shelving and racks should be protected from damage by forklifts and other [powered mobile equipment](#). Note that BC has the strictest and detailed OHS regulations for shelves and racking.

## **3. Pallets**

The pallets on which materials are stacked must be strong

enough to support the weight they bear and sturdy enough to stand up to the conditions of the storage location. Pallets should be regularly inspected for damage, wear or other indications that they may no longer be suitable to support their loads. You must also take measures to ensure the stability of loads stacked on pallets such as bonding, interlocking, strapping and limiting how high materials can be stacked.

#### 4. Positioning of Stacks

Stacks must be stored in a suitable location that won't obstruct entry, exit or travel so as to allow ease of access for workers, machinery and equipment, one that is also well away from electrical wires, heat, vibration, wind, sources of ignition and other hazards. There should be adequate clearance between stacks and walls, ceilings, light fixtures and sprinkler heads. Stacks containing combustible, toxic or other hazardous materials may have to be located in separate, isolated storage areas. Outdoor stacks may require special protections against the weather, such as support against the wind or tarps to keep out the rain.

#### 5. Stack Shape & Size

Stacks must be of suitably safe size and shape, which will depend on storage space available and the size, shape, bulk, weight, rigidity or fragility of the materials to be stored. Acceptable stack forms may include:

- **Column stacks** where single articles are placed one above the other;
- **Square stacks** or any stack, other than a column, with all sides vertical (Note: the stack does not have to be 'square' in the ordinary sense of the word);
- **Pyramid stacks** in which the plan area is reduced in every succeeding tier;

- **Stepped stacks** that have 2 or more adjacent tiers of the same area and each succeeding group of tiers is of a smaller area than the group on which it's set;
- **Triangular stacks** in pyramid or stepped form on 2 opposite sides, the other 2 sides being vertical;
- **Lean-to stacks** which are pyramid or stepped on one side and vertical on the other 3 sides.

## 6. Stack Stability

Your policy must also provide for ensuring that stacks remain stable via addressing key factors such as:

- The relation of height to base dimension;
- Interlocking of the materials;
- What the containers, boxes or other things being stacked contain;
- The weight, size and shape of those articles; and
- Determination of the aggregate weight to be borne by the components in the stack's lowest tier of the stack.

If size, shape, weight, arrangement and height-to-base ratio aren't enough to ensure stability, it may be necessary to use bonding, strapping, tying or other methods to keep stacks stable.

## 7. Material-Specific Safety Measures

The measures needed to ensure safe stacking vary depending on the actual materials being stacked. Your policy should include separate guidelines for stacking:

- Lumber;
- Barrels and drums;
- Bagged materials;
- Boxes;
- Bales;
- Cartons;

- Frozen carcasses;
- Coils of wire;
- Glass bottles and wires;
- Sheet metals and other sheeted materials; and
- Steel tubes.

## **8. Segregation of Stacks**

It may be necessary to keep stacks of some materials away from stacks of other materials, such as stacks of combustible materials from stacks of materials that might emanate heat or stacks of chemicals from other chemicals to which they may react.

## **9. Breaking Down Stacks**

Injuries and incidents are especially likely to occur when stacked materials are being broken down or unstacked. So, there must be safe work procedures for unstacking. Among other things, the unstacking operation should be overseen by one and only one competent person, preferably the same person who constructed the stack or at least a person who understands how the stack was constructed.

## **10. Safe Stacking Processes**

It's also essential to establish, train workers on and ensure the implementation of [basic safe work practices](#) when engaging in stacking operations or work on or near stacks of materials.