

PART 4: GENERAL CONDITIONS

STORING AND HANDLING MATERIALS

Stacking materials

- 4.43 (1) Material and equipment must be placed, stacked or stored in a stable and secure manner.
- (2) Stacked material or containers must be stabilized as necessary by interlocking, strapping or other effective means of restraint to protect the safety of workers.

Storage racks

- 4.43.1 (1) In this section, “storage rack” means steel shelving or a steel framework designed for storing things on, including, for example, a pallet rack or cantilever rack.
- (2) The employer must ensure that a storage rack in the workplace is
- (a) capable of safely supporting the items stored on it,
 - (b) designed and constructed in accordance with good engineering practice, and
 - (c) used in accordance with the specifications and instructions of the manufacturer or a professional engineer.
- (3) The employer must ensure that a qualified person installs and uninstalls, in whole or in part, the storage rack in accordance with the instructions of the manufacturer or a professional engineer.
- (4) The employer must ensure that the instructions of the manufacturer or a professional engineer for safely installing, uninstalling, loading, unloading, using and inspecting the storage rack are readily available in the workplace to workers or a qualified person referred to in subsection (3) or (7).
- (5) The employer must ensure that the rated capacity of the storage rack is clearly posted near the storage rack and readily visible to workers.
- (6) The employer must ensure that any structural modification of the storage rack is carried out in accordance with the specifications and instructions of the manufacturer or a professional engineer.
- (7) The employer must ensure that a qualified person, in accordance with the instructions of the manufacturer or a professional engineer, regularly inspects the storage rack for wear, corrosion, damage, missing or incompatible parts, or signs of fatigue at intervals that will prevent the development of unsafe working conditions.

- (8) The employer must ensure that, with respect to the storage rack,
- (a) regular maintenance is done, and
 - (b) wear, corrosion, damage, missing or incompatible parts, or signs of fatigue are repaired or replaced as indicated by, and in accordance with, the specifications and instructions of the manufacturer or a professional engineer.
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EXPLANATORY NOTES TO THE PROPOSED AMENDMENTS:

Steel storage racks, such as the common industrial pallet racks, are ubiquitous equipment found in many workplaces. There are inherent hazards associated with the steel storage racks because they are often used to store large quantities of materials or items like in distribution warehouses or retail stores. If the racks are not properly installed, maintained and repaired, catastrophic failures of racks can cause serious injuries and fatalities.

In most workplaces, storage racks are loaded and unloaded with powered mobile equipment which increases the potential for rack damage. There have been serious injuries reported to WorkSafeBC resulting from storage rack failures. In other jurisdictions, there have been instances where unsafe storage racks have caused fatalities.

Currently, the Occupational Health and Safety Regulation (“OHSR”) does not contain specific safety requirements for storage racks. Without clearly defined requirements in the OHSR for its proper installation, inspection and maintenance, employers and WorkSafeBC officers may not consistently apply the various requirements in the existing OHSR to ensure storage racks are installed and used in a safe manner.

WorkSafeBC officers have predominantly issued orders under sections 4.2 (Safe building and structures), 4.3 (Safe machinery and equipment), 4.8 (Rated capacity), and 4.43 (stacking materials) of the OHSR, as well as the general duty clauses of the *Workers Compensation Act*, to require employers to rectify unsafe conditions. However, these sections are not specific to storage racks.

The primary objective of these proposed amendments is to outline the safety requirements for storage racks in workplaces to ensure stakeholders understand the hazards associated with these common workplace equipment. WorkSafeBC officers would have consistent standards for enforcing safe storage rack requirements.

The CSA Standard A344.1-05, *User guide for steel storage racks; Standard for the design and construction of steel storage racks*, and the ANSI MH16.1-2008 *Design, Testing and Utilization of Industrial Steel Storage Racks*, were reviewed to incorporate some of the elements of the standards into the proposed requirements.

Proposed subsection 4.43.1 (1):

The new proposed requirements apply to steel storage racks of various sizes and shapes. The most common types of storage racks that these proposed amendments would apply to are pallet racks and cantilever racks. There are other types of storage racks that the proposed amendments would also apply to, such as the drive-in rack, drive-through rack, and the push-back rack.

The new requirements would not apply to storage racks made out of wood, plastic or materials other than steel, but the safety requirements in the existing sections of the OHSR would continue to apply to ensure all materials are stored in a safe manner.

Proposed subsection 4.43.1 (2):

The proposed subsection (2) requires that employers ensure that a storage rack in their workplace is appropriate for intended purpose. The storage rack could be designed and constructed with good engineering practices, but the storage rack must also safely support the items. The storage rack must be used in accordance with the specifications *and* instructions provided by the manufacturer of the storage rack or a professional engineer.

The proposed subsections specifically reference both the storage rack's design specifications and instructions (generally found in rack user guides or manuals) because there are differences between them:

- Specifications of a storage rack design include detailed technical information regarding the specific storage rack's configuration and rated capacity, such as the maximum allowable product load per storage level, number of storage levels, vertical spacing between storage levels, component details, etc.
- Instructions usually found in user guides or manuals for a storage rack consist of a set of installation, operational and maintenance instructions that outline how to properly and safely assemble (install and uninstall), use (load and unload), and maintain (inspect and repair) a specific storage rack system.

Various types of storage racks will have specifications and instructions that are intended for the particular storage system based on its unique characteristics and the manufacturer of the rack.

In circumstances where the manufacturer of the storage rack is not known or cannot be contacted, a professional engineer could provide specification and instructions to the employer for the storage rack.

Proposed subsection 4.43.1 (3):

The proposed subsection (3) states that a qualified person installs and uninstalls storage racks in accordance with the instructions of the manufacturer of the storage rack or a professional engineer. Steel storage racks are engineered structures constructed by a network of bracings and framework designed to withstand specified loads. Proper installation and dismantling of storage racks are critical for the safe use of the storage racks. If installed incorrectly, storage racks could have catastrophic consequences. Similarly, if a storage rack is disassembled incorrectly, racks could collapse prematurely and endanger workers.

Proposed subsection 4.43.1 (4):

The proposed subsection (4) requires that the employer obtain instructions from either the manufacturer of the storage rack or a professional engineer and the instructions must be readily available in the workplace to workers and to the qualified person. The instructions are required for the installing, uninstalling, loading, unloading, using and inspecting the storage rack.

Proposed subsection 4.43.1 (5):

The proposed subsection (5) ensures that the rated capacity of the storage rack is clearly posted and is readily visible to workers. The rated capacity does not have to be posted on the rack unit itself, but it must be posted in the general vicinity of the storage rack and the workers must know where it is posted so it can be referenced as needed.

Proposed subsection 4.43.1 (6):

Steel storage racks are engineered to a specified configuration and rated capacity. The employer must ensure that any structural modifications that may affect the strength or stability of the storage rack are carried out in accordance with the specifications and instructions of the manufacturer or a professional engineer. Unauthorized modifications could compromise the structural integrity of the storage rack and endanger workers.

Typically, the installation of storage rack accessories are permitted by the manufacturer since they are not included as part of the design specifications, but its use should be confirmed with the manufacturer.

Proposed subsection 4.43.1 (7):

Storage racks, just like other industrial equipment, endure 'wear and tear' with usage. Also, storage racks are often damaged by mobile equipment that moves items to and from the storage racks. In the proposed subsection (7), regular inspections of the storage rack are required to ensure that wear, corrosion, damage, missing or

incompatible parts, or signs of fatigue are promptly identified to prevent the development of unsafe working conditions.

Proposed subsection 4.43.1 (8):

In the proposed subsection (8), employers must ensure that storage racks are regularly maintained and the wear, corrosion, damage, missing or incompatible parts, or signs or fatigue are repaired or replaced in accordance with the specifications and instructions of the manufacturer or a professional engineer.

The proposed requirements do not specify the type or extent of damage to the rack that must be repaired or replaced since the design and the rated capacity of storage racks and their tolerances for damage could vary greatly. The manufacturer of the storage rack or a professional engineer is qualified to provide specific instructions about repairs or replacement of certain parts of the storage rack based on their assessment. During an inspection, WorkSafeBC officers may ask an employer whether the observed damage on the storage rack has been inspected by a qualified person and whether any specifications or instructions have been obtained from the manufacturer or a professional engineer to repair or replace the damaged part.