

Environmental Health, Safety and Emergency Management



APPALACHIAN STATE UNIVERSITY

Pallet Racking Safety Program

1. Introduction

Pallet racking systems can be a useful tool to meet storage and material handling needs when set up, utilized, and maintained properly. Conversely, pallet racking can result in workplace hazards when not used as designed by the manufacturer. OSHA recognizes these hazards and may use 1910.176(b) Materials Handling and Storage Standards, ANSI/RMI MH16.1 – Specification for the Design, Testing and Utilization of Industrial Steel Storage Racks, or paragraph (5)(a)(1) of the OSH Act (General Duty Clause) to cite organizations utilizing unsafe racking systems.

2. Scope

The Appalachian State University (ASU) Pallet Racking Safety Program (hereinafter referred to as the program) applies to industrial steel storage racks made of cold-formed or hot-rolled steel structural members used or owned by ASU departments. It does not apply to other types of racks, such as portable racks, or to racks made of material other than steel. The program assumes the use of steel of structural quality as defined by the specifications of the American Society for Testing and Materials (ASTM) that are listed in the American Iron and Steel Institute (AISI) North American Specification for the Design of Cold-Formed Steel Structural Members.

3. Definitions

3.1 Beam – Typically, a horizontal structural member that has the primary function of resisting bending moments.

3.2 Beam Locking Device - A pin, bolt, or other mechanism that resists disengagement of the beam connector from the column.

3.3 Upright - Structural member that has the primary function of resisting axial force.

3.4 Upright Frame – A structural assembly that transfers the vertical and horizontal loads to the floor. It is usually made up of two columns and bracing members between the columns. The beams of the rack are attached to the columns of the frames and transfer the loads to the columns.

3.5 Out-Of-Plumb -Horizontal distance (inches or mm) from the centerline of the column at the floor to a plumb line that extends downward from the centerline of the column at the top shelf elevation.

3.6 Out-Of-Straight – Horizontal distance (inches or mm) from the centerline at any point on the column to a plumb line from any other point on the column.

3.7 Pallet Beam - The front and back shelf members that bear the weight of the load and transfer the load to the upright frames.

3.8 Pallet Rack - A rack structure comprised primarily of vertical upright frames and horizontal shelf beams and typically used for one and two-deep pallet storage.

3.9 Product Load - The weight of the item(s) placed on the rack.

3.10 Stability - Condition reached in the loading of a structural component, frame or structure in which a slight disturbance in the loads or geometry does not produce large displacements.

4. Integrity of Racking Installations

4.1 Maintenance

The owning department shall maintain the structural integrity of the installed rack system by assuring proper operational, housekeeping, and maintenance procedures including, but not limited to, the following:

- a) Prohibit any overloading of any pallet positions and of the overall rack system.
- b) Regularly inspect for damage. If damage is found, immediately isolate the affected area. Have a storage rack design professional evaluate the damage, and unload, replace or repair if directed by the professional, any damaged uprights, beams, or other structural components to restore the system to at least its original design capacity.
- c) Require all pallets to be maintained in good, safe, operating condition.
- d) Ensure that pallets are properly placed onto pallet load support members in a properly stacked and stable position.
- e) Require that all goods stored on each pallet be properly stacked and stable.
- f) Prohibit double-stacking of any pallet position, including the top-most position, unless the rack system is specifically designed for such loading.
- g) Ensure that the racks are not modified or rearranged in a manner not within the original design configurations.

4.2 Inspections

- a) All departments containing or utilizing pallet racking systems shall schedule an annual inspection with the department of Environmental, Health, Safety and Emergency Management (EHS&EM).
- b) All racking inspection deficiencies found to cause immediate danger to life or health (IDLH) shall be corrected immediately, or immediately have the affected bays offloaded and marked with caution tape to prevent reloading.
- c) All other conditions needing improvement shall be remedied as directed during the inspection within 30 days.
- d) Each department shall keep inspection and remediation records onsite for no less than three years.

5. Resources

5.1 For pallet racking safety questions or concerns, or to schedule a racking inspection, contact EHS&EM at x4008 or via email at safety@appstate.edu.

5.2 The annual safety inspection worksheet can be found below. It outlines the most common issues found during racking inspections.



Racking Inspection
Checklist