

Pallet racking: safe use and maintenance

This advice is for the Person Conducting a Business or Undertaking (PCBU), including those with management or control of a workplace and workers. This includes a person in control of racking, warehouse and maintenance, training organisations, forklift operators, store persons and health and safety representatives.

Racking design and layout

Any racking used in the workplace should be designed specifically for the size, shape and weight of the products being stored. It is also important that all racking is set up and maintained according to the manufacturers' instructions.

The layout of racking should be compatible with the material handling equipment used in the workplace. For example, aisle width should match the turning circle of the forklift used for picking and replenishment.

The layout should also consider emergency access, adequate lighting and any manual handling activities.

Rated capacity

There are two critical rated capacities related to racking and they should never be exceeded. They are:

- maximum unit load
- total rated capacity for each bay.

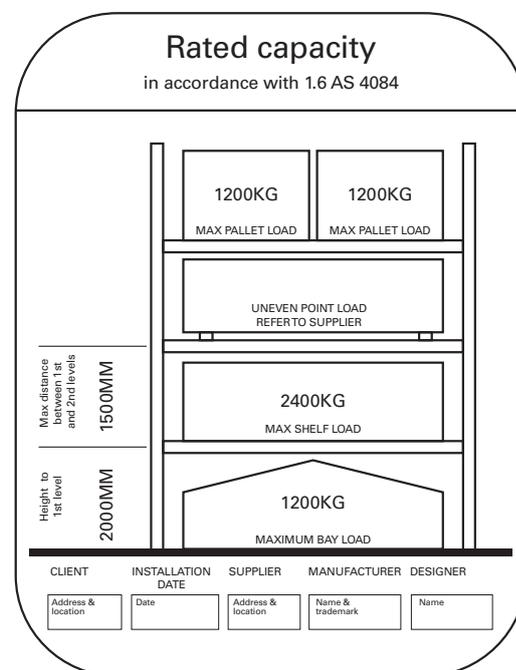
Unit load is an individual stored item; for example, a pallet having material that can be placed or retrieved in one operation. The total weight of unit loads stored on a bay must not exceed the rated capacity of the bay.

This information should be provided to people who use the racks. One of the most effective means of doing this is to mark the information clearly in a visible location on the racking.

Signage

AS 4084—2012 Steel storage racking requires racking installations to comply with all of the following:

- the racking installations shall have, in one or more conspicuous locations, a permanent, corrosion-resistant plaque at least 125 mm long and 250 mm high, with maximum load action figures, written in a large font (at least 25 mm high), mechanically secured to the racking structure at 2 m above the floor level, which shall display:
 - the permissible working unit load limit
 - the permissible total working unit load limit for each pallet beam level
 - the permissible total working unit load limit for each bay
 - the designer's name
 - the racking manufacturer's name, supplier's name and trademark, and the installation date
 - the maximum distance from base plate level to the first beam level, and the maximum distance between first and second beam levels.



NOTE: Permissible working action is to be determined as the unfactored working action (that is, actions less action factors), inclusive of pallet weight.

- b. load application, racking configuration drawings and specifications shall be furnished with each racking installation. A notice shall be included on the drawings stating that deviations from the drawings may impair the safety of the racking installation
- c. if the racking is required to be used in more than one configuration, structural drawings shall include each required configuration
- d. if the maximum extent of damage assumed in the design differs from that shown in the figure shown here, then values for maximum damage shall be specified in the drawings and specification.

There should always be some way of determining the weight of each unit load being placed into the racking.

Modifications to racking design or components

Modifications should only be made by a competent person who has been given all the information provided by the supplier. Any modifications to the racking should take into account the effect on load limits and should also be approved by the manufacturer, supplier or a qualified engineer who has knowledge and experience in similar work. Operating procedures, signs and drawings must be updated to include details of the modifications.

Never make physical alterations to uprights, bracings, beams or components (for example, welds on additional cleats or bearers) without the approval of a competent person.

Replacing uprights, bracings, beams, clips or other components should be done using parts from the equipment manufacturer. If alternative parts must be used, an engineering report should confirm that they are compatible with racking being repaired.

Single bay racking

In situations where pedestrians can access the back of the racking, and single rows have been installed, rear protection should be fitted to prevent loads falling out of the back of the racking.

Operating instructions

Put procedures in place to ensure operations are done safely with regard to the racking design, the load and capacity of lifting equipment. As a minimum, these should include:

- correct use of the handling equipment
- rated capacities of the racking
- prohibitions on unauthorised alterations
- a clear process for reporting any damage as soon as it occurs.

Selection of pallets and goods on pallets

Pallet racking should take into account the nature of goods in the unit load. An assessment of any change to the pallet design should be done by a competent person to prevent problems. For example:

- changing from timber pallets to post pallets will apply concentrated loads on racking beams and the pallets may not key into the beams
- using pallets larger than the racking design can overlap pallets behind or push them off their supports
- using pallets smaller than allowed for, in the racking, can make them drop through
- using skid pallets in racking without timber decks can allow them to drop through.

Potential problems that may require changes to racking design include:

- boxes, cartons and other items overhanging the pallet they are stored on (unless the racking structure has the correct clearance)
- falling items from boxes, cartons and other loose loads stored on upper levels (unless this is prevented by wrapping, strapping or by some other means; for example, end frame extensions and pallet safety backstop).

Note: Overseas pallets often differ in size and may not fit Australian racking.

Inspections

The work health and safety legislation requires plant and structures (including racking) are without risk to health and safety. To ensure this, racking should be inspected regularly to confirm its integrity.

AS 4084—2012 Steel storage racking requires inspections to be carried out on a regular basis, and at least once every twelve months, to:

- ensure the correct application and use of equipment
- ensure the working load limits are adhered to
- ensure the racking installation has not been altered. A copy of the load application and configuration drawings shall be retained for this purpose
- examine the extent of damage due to impact in the racking installation
- examine the out-of-plumb of the racking
- look for any dislocation and deformation of sections and connects for uprights and beams
- examine connectors for deformation or signs of cracking of the welds
- examine base plates and floor anchors.

For more information contact

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