



SAFETY BRIEF: LADDER SAFETY AND FALL PROTECTION

Falls are in the top 3 most common disabling workplace injuries.

Among workers, approximately 20% of fall injuries involve ladders.

Fall Protection and Ladders held 3 places, including the #1 spot, on OSHA's Top 10 Most Cited Violations list for Fiscal Year 2021.

Falls—both falls from heights and falls on the same level or working surface—are among the leading causes of serious work-related injuries and deaths. In 2016, OSHA issued a final rule to update its General Industry walking-working surfaces and fall protection standards, with the rule taking effect on January 17, 2017. The rule updates general industry standards addressing slip, trip, and fall hazards and adds requirements for personal fall protection systems. Employers benefit from the rule by gaining greater flexibility in choosing a fall protection system. Also, OSHA has aligned fall protection requirements for general industry with those for construction as much as possible, so compliance will be easier for employers who perform both types of activities. For example, the final rule replaces the outdated general industry scaffold standards with a requirement (1910.27(a)) that employers comply with OSHA's construction scaffold standards.

Although ladder accidents are common, they are preventable. Ladder accidents can stem from many issues, but most accidents are the result of the following four main causes. Most ladder accidents could be eliminated by following simple loss prevention tips for each cause.

1. Selecting the right ladder for the job.

Like most other jobs, choosing the right tool can make all the difference when it comes to safety and this is the same for ladders. One thing to consider when selecting an appropriate ladder is the ladder's weight capacity. Each ladder is designed to support a maximum weight limit, and if the climber exceeds that limit the ladder could break and cause the user to fall or become injured.

Another consideration when selecting the appropriate ladder for a job is the necessary height of the ladder. Many injuries occur due to ladders being too short for a specific task, and instead of selecting a new ladder for the job, workers will place the ladder on something to extend its reach or will stand on the top rung to gain the necessary height. Both scenarios are extremely dangerous and can result in serious injuries.

Finally, ladders must have nonconductive side rails, such as fiberglass, if they are used where the worker or the ladder could contact exposed energized electrical equipment.

2. Inspect the ladder before each use.

Another common contributing factor to ladder accidents is the use of old, worn, or damaged ladders. Like everything else, ladders have a shelf life; after a couple of years the stress of being



climbed on causes ladders to break down. Damaged ladders are extremely dangerous as they can easily break while being used and cause serious injuries.

To protect yourself from damaged or broken ladders, make sure to thoroughly inspect each ladder before using it. If any damage is found, do not use the ladder until it has been safely repaired to the manufacturer's specifications or it has been replaced; tag the damaged ladder so that it is not returned to service until repaired.

3. Learn how to use the ladder properly.

Human error is by far the leading cause of ladder accidents. Never use a ladder in any other way than what the manufacturer intended it to be used for. Also, do not lengthen or alter a ladder in any way.

While using a ladder **always maintain 3 points of contact** with the ladder to ensure stability. Face the ladder when ascending or descending. Also, never attempt to reach for something while on the ladder. It is much safer to get off the ladder, move it, and then climb back up. Ladders must not be moved, shifted, or extended while in use.

4. Position the ladder properly.

Make sure that when positioning a ladder, the ground you place it on is level and firm. Ladders should never be placed in front of a door that is not locked, blocked, or guarded.

A good practice to ensure a ladder is secure is to always have a helper support the base while a ladder is being used. If the ladder cannot be held by someone else, make sure it has an appropriate foot to prevent it from slipping. The feet of the ladder can be staked if you are using a ladder outside and no one is available to support the feet of the ladder.

Non-self-supporting ladders must be used at an angle where the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder. When portable ladders are used for access to an upper landing surface, the side rails must extend at least 3 feet above the upper landing surface. When such an extension is not possible, the ladder must be secured, and a grasping device such as a grab rail must be provided to assist workers in mounting and dismounting the ladder.

Fall Protection Options (1910.28(b))

Employers are required to protect workers from fall hazards along unprotected sides or edges that are at least 4 feet above a lower level. OSHA also requires fall protection in specific situations, such as wall openings, scaffolds, stairways, hoist areas, and runways. The rule also establishes requirements for the performance, inspection, use, and maintenance of personal fall protection systems.



OSHA defines fall protection as “any equipment, device, or system that prevents a worker from falling from an elevation or mitigates the effect of such a fall.” Under the final rule, employers have the flexibility to select from several options to provide fall protection:

- **Guardrail System** – A barrier erected along an unprotected or exposed side, edge, or other area of a walking-working surface to prevent workers from falling to a lower level.
- **Safety Net System** – A horizontal or semi-horizontal, cantilever-style barrier that uses a netting system to stop falling workers before they make contact with a lower level or obstruction.
- **Personal Fall Arrest System** – A system that arrests/stops a fall before the worker contacts a lower level. Consists of a body harness, anchorage, and connector, and may include a lanyard, deceleration device, lifeline, or a suitable combination. Like OSHA’s construction standards, the final rule prohibits the use of body belts as part of a personal fall arrest system.
- **Positioning System** – A system of equipment and connectors that, when used with a body harness or body belt, allows a worker to be supported on an elevated vertical surface, such as a wall or window sill, and work with both hands free.
- **Travel Restraint System** – A combination of an anchorage, anchorage connector, lanyard (or other means of connection), and body support to eliminate the possibility of a worker going over the unprotected edge or side of a walking-working surface.
- **Ladder Safety System** – A system attached to a fixed ladder designed to eliminate or reduce the possibility of a worker falling off the ladder. A ladder safety system usually consists of a carrier, safety sleeve, lanyard, connectors, and body harness. Cages and wells are not considered ladder safety systems.

Ladder Safety Requirements (1910.28(b)(9))

Falls from ladders account for 20 percent of all fatal and lost work-day injuries in general industry. The new rule includes requirements to protect workers from falling off fixed and portable ladders as well as mobile ladder stands and platforms. (The ladder requirements do not apply to ladders used in emergency operations or ladders that are an integral part of or designed into a machine or piece of equipment).

In general, ladders must be capable of supporting their maximum intended load, while mobile ladder stands and platforms must be capable of supporting four times their maximum intended load. Each ladder must be inspected before initial use in a work shift to identify defects that could cause injury.

Fixed Ladders – Fixed ladders are permanently attached to a structure, building, or equipment. These include individual-rung ladders, but not ship stairs, step bolts, or manhole steps. The new rule phases in a requirement for employers to have ladder safety or personal fall arrest systems for fixed ladders that extend more than 24 feet, and phases out the use of cages or wells for fall protection under the following timeline: Starting in 2019, all new fixed ladders and replacement ladder/ladder sections must have a ladder safety or personal fall protection system. For existing ladders, by 2019, employers must install a cage, well, ladder safety system, or personal fall arrest system on fixed ladders



that do not have any fall protection. Within 20 years of the final rule (by 2037), all ladders extending more than 24 feet must have a ladder safety or personal fall arrest system.

Portable Ladders – Portable ladders usually consist of side rails joined at intervals by steps, rungs, or cleats. They can be self-supporting or lean against a supporting structure. The final rule will be easier for employers and workers to understand and follow because it uses flexible performance-based language instead of detailed specification and design requirements. Under the revisions, employers must ensure that: rungs and steps are slip resistant; portable ladders used on slippery surfaces are secured and stabilized; portable ladders are not moved, shifted, or extended while a worker is on them; top steps and caps of stepladders are not used as steps; ladders are not fastened together to provide added length unless designed for such use; and ladders are not placed on boxes, barrels, or other unstable bases to obtain added height.

Rope Descent Systems and Anchorages (1910.27(b))

The final rule codifies OSHA's memorandum for employers who use RDS to perform elevated work. It prohibits employers from using RDS at heights greater than 300 feet above grade unless they demonstrate it is not feasible or creates a greater hazard to use any other system above that height. In addition, the final rule requires building owners to provide, and employers to obtain, information that permanent anchorages used with RDS have been inspected, tested, certified, and maintained as capable of supporting at least 5,000 pounds per employee attached.

Inspection of Walking-Working Surfaces (1910.22(d))

The final rule requires that employers inspect walking-working surfaces regularly and as needed and correct, repair, or guard against hazardous conditions.

Training Requirements (1910.30)

The rule added a requirement that employers ensure workers who use personal fall protection and work in other specified high hazard situations are trained, and retrained as necessary, about fall and equipment hazards, including fall protection systems. A qualified person must train these workers to correctly: identify and minimize fall hazards; use personal fall protection systems and rope descent systems; and maintain, inspect, and store equipment or systems used for fall protection.

When there is a change in workplace operations or equipment, or the employer believes that a worker would benefit from additional training based on a lack of knowledge or skill, then the worker must be retrained. The training must be provided in a language and vocabulary that workers understand.

You can find additional information on OSHA's rule on walking-working surfaces and personal fall protection systems at www.osha.gov/walking-working-surfaces.