



## **Boston College**

*Office of Environmental Health and Safety*

# **PORTABLE LADDER SAFETY**

## ***Introduction***

Portable ladders are used in a wide variety of settings, both academic and administrative. Misuse of portable ladders can result in serious injuries from falls or, in the case of metal ladders, electrical shock. Portable ladders must be maintained in good condition at all times, and inspected at regular, frequent intervals. Training is also an important aspect of portable ladder safety and accident prevention.

There are two types of portable ladders: stepladders (A-frame) or straight (extension) ladders. Both types can also be made out of different materials, including metal, wood, or fiberglass. Metal ladders should never be used for work on or around exposed electrical elements; a wood or fiberglass ladder is necessary. However, refer to warning labels on the ladder or the manufacturer's directions because some nonmetal ladders are reinforced with steel or other conductive materials.

## ***Applicable Regulation***

The Occupational Safety and Health Administration (OSHA) requirements for portable ladders for general industry are described in 29 CFR 1910 Subpart D sections 21,22, 25,26. These requirements apply to all Boston College departments where portable ladders are used. This section *does not* address OSHA requirements for fixed ladders.

This summary of information prescribes rules and establishes minimum requirements for the construction, care and use of common ladders under normal conditions of usage.

## ***Summary of Requirements***

### General Safety Requirements

Care should be taken while setting up ladders, ensuring that a proper angle is maintained. A simple rule for setting up a ladder is to place the base out from vertical a distance of one-fourth the length of the ladder. For example, if a ladder has a length of 8 feet, the base should be set out 2 feet from vertical to achieve a proper angle. Ladders should always be placed on stable surfaces. Boxes, barrels, vehicles or other unstable surfaces should never be used to obtain additional height.

Ladders shall be placed to prevent slipping, lashed or held in position. They may not be used in horizontal positions for use as platforms or runways. Ladders may be used by only one person at a time unless specifically designed to accommodate additional people.

Length is extremely important in selecting the proper straight ladder. If the ladder is used to reach a roof or elevated platform, select one that can safely extend at least three feet above the point of support.

If conditions exist that make a ladder unsafe for use, it should be removed from service immediately and marked with a warning such as "Dangerous – Do Not Use". If a ladder cannot be repaired, it should be destroyed.

### Portable Wooden Ladders

Portable wooden ladders should be maintained free of sharp edges, splinters, and other visual defects. Each ladder should be inspected before use for shake, compression failures, decay, or other irregularities and removed from service if found defective. Wooden ladders should never be painted, as paint may hide defects that could lead to failure.

Wooden step ladders are not to exceed 20 feet in length. Single-section portable ladders are not to exceed 30 feet in length, while two-section portable ladders are not to exceed 60 feet in length.

### Portable Stepladders

These ladders shall not be more than 20 feet in height and are separated into three types, Type I or Industrial; Type II or Commercial; or Type III for household type use. A metal spreader or locking device to securely hold the front and back sections shall be a component of each stepladder.

### Portable Metal Ladders

As with wooden ladders, portable metal ladders should be inspected before use. Because metal ladders will easily conduct electricity, they must never be used for work on or near exposed electrical conductors.

Metal step ladders are not to exceed 20 feet in length. Single-section ladders are not to exceed 30 feet in length, while two-section ladders are not to exceed 48 feet in length. Portable metal ladders with more than two sections are not to exceed 60 feet in length.

*Other types of ladders* include portable rung ladders. These can be single, two-section, sectional, or trestle. Special purpose ladders include painters stepladder, mason's ladder and trolley and side rolling ladders. Specifications for each of these are outlined in the regulations.

### Care of Ladders

Ladders shall be maintained in good condition at all times.

- The joints between the steps and siderails shall be tight.
- Hardware and fittings shall be secure.
- Moveable parts shall operate freely.
- Metal bearings should be frequently lubricated.
- Frayed or worn rope shall be replaced.
- Safety feet and other auxiliary equipment shall be kept in good repair.
- Rungs shall be kept free of grease and oil.
- If tipped over, inspect for dents, bends, rungs, hardware security or other damage.

### ***Additional Recommendations***

#### Portable Ladder Climbing Guidelines

There are a few climbing guidelines that help to prevent accidents when using a portable ladder. Wear shoes with nonskid soles that are free of

snow, mud or grease. Metal rungs can be very slippery in certain conditions. Just as you shouldn't stand on the top or top step of a stepladder, you should also avoid standing higher than the third highest rung from the top of a straight ladder. This can make the ladder unsteady and leaves the user with no handhold.

If necessary, have another person hold the base of the ladder. This helps with stability as well as assistance in unloading objects from a height. If no one is available, the ladder should be securely lashed or fastened (top and bottom) to prevent it from slipping.

Overreaching can also cause instability. A good rule of thumb is to not let one's belt buckle outside the uprights. Also, when climbing or descending ladders, always face the ladder and hold onto each side rail.

### Storage and Maintenance

Storage and maintenance of ladders need to be considered as well. It's best to hang a ladder horizontally on wall hooks in a dry place not subject to extremes of temperatures. The user can do minor maintenance, like lubricating hinges and tightening hardware. However, ladder repair is specialized work and should be completed by qualified persons or the manufacturer.

### ***Training***

Departmental training should cover the proper use, inspection of, and hazards related to portable ladders. Information should be based on this factsheet, details of the OSHA regulations as applicable and manufacturer recommendations on use of specific ladders. This may include the following topics:

- the nature of fall hazards,
- correct usage, and
- load-carrying capacities.

Those who use ladders near exposed electrical conductors should also receive training in electrical safety-related work practices.

### ***University Resources***

Office of Environmental Health and Safety,  
St. Clements Hall, Room 120 at x2-0308.

<http://www.bc.edu/ehs>

<http://www.osha.gov/>

December 6, 2000