Ladder Safety

Ladders are useful tools and can be safe methods to access elevated work areas when used properly. Ladders are very familiar to many workers and easy to use. However, misuse can result in serious injuries or death. The Occupational Safety & Health Administration (OSHA) reports that “Falls from portable ladders (step, straight, combination and extension) are one of the leading causes of occupational fatalities and injuries.”

Injuries and fatalities resulting from ladder related accidents are common workers’ compensation claims and can represent a substantial cost to our policyholders. Even the common step ladder, used in almost every business, is often the source of serious injuries and fatalities resulting from its misuse. Fatalities as a result of falling 6 feet or less are not uncommon.

Besides the impact that ladder-related claims have on the cost of insurance, there are also many other costs which can significantly impact your business. When you consider the cost of replacing damaged equipment, the loss of a productive worker, lost production, and possible damage to customer property, it makes sense to prevent these losses instead of continually trying to overcome their costly results.

This Alert provides some suggested safe practices that may be useful in preventing ladder related worker injuries.

Selection:
Each type of ladder must meet the specifications of the American National Standards Institute (ANSI) and bear a label identifying that it does meet these specifications. There are many different types of ladders all designed for a specific purposes. Selecting and using the proper ladder to fit each job will help to prevent worker injuries. Factors to consider in selection include:

**Duty Rating**
In general, ladders must be able to support 4 times the maximum anticipated load. This load is determined by the combined weight of the user, any special clothing or protective equipment worn, and the total weight of all tools, supplies & material to be carried and stored on the ladder. The safe supporting capacity of a ladder is its duty rating. The duty rating is expressed in five categories:

<table>
<thead>
<tr>
<th>Rating</th>
<th>Purpose</th>
<th>Designed Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type IAA</td>
<td>Extra Heavy Duty</td>
<td>375 pounds</td>
</tr>
<tr>
<td>Type IA</td>
<td>Extra Heavy Duty</td>
<td>300 pounds</td>
</tr>
<tr>
<td>Type I</td>
<td>Heavy Duty</td>
<td>250 pounds</td>
</tr>
<tr>
<td>Type II</td>
<td>Medium Duty</td>
<td>225 pounds</td>
</tr>
<tr>
<td>Type III</td>
<td>Light Duty</td>
<td>200 pounds</td>
</tr>
</tbody>
</table>

ANSI requires that the duty rating of each ladder be marked on the side of all ladders.

Using ladders for tasks involving loads that exceed its capacity is a common source of injuries. As such, Everest suggests using the highest rated ladders to assure tasks can be performed safely. If tasks will involve heavier loads, lifting equipment must be employed such as hoists, aerial lifts or other mechanical devices designed for these heavier loads.

**Length**
The length of the ladder is important to assure elevated platforms can be safely accessed and that it does not require the user to stand on the top 3 rungs of the ladder. Straight or extension ladders must not exceed 30 feet in length and when used to access an elevated surface must extend at least 3 feet above the point of support.
Straight and extension ladders should be able to reach 7 to 10 feet above the highest support point. This accepted safety practice allows for changes in setup height, a good overlap of the ladder sections, and provide a safe working level.

Step ladder length should not be less than 4 feet below the height you want to reach.

**Type**
Ladders can be made of aluminum, fiberglass or wood and come in a variety of types such as straight, extension, step, articulating and trestle. A ladder’s composition and type are key considerations in selecting the right one for the tasks to be performed. Each type has characteristics that make it more suitable for specific tasks. For example, fiberglass or wood ladders may be used around electrical lines or for some chemical laden working environments. The lightweight of aluminum ladders make it less stressful to workers when jobs involve frequent ladder relocation, adjustments, and manual transport. Only ladders with a duty rating of Type IA or Type I can be used on construction job sites.

A straight ladder or extension ladder is best for reaching heights over 10 feet. Articulating ladders allow users to access elevated difficult-to-reach areas. These ladders can be configured into many shapes and are best used when work needs to be completed on a large area of elevated space such as painting a wall.

Labels identifying the duty rating, specific ANSI specifications, safe use instructions and warnings must be attached to every ladder.

**Inspection:**
Inspect all ladders:
- When purchased
- Before each day’s use
- After any occurrence which could damage the ladder such as a fall, or being struck by material or equipment
- Following any worker accident involving a ladder
- On a regular basis

Ladders must be inspected by a competent person, to assure they are structurally sound, properly constructed and stable, and can prevent falls of material and personnel. Ladders must be checked to make sure all parts are in sound condition; that braces, bolts and screws are tight and present; the anti-slip feet are in good condition; and that no slippery material is on the steps or rungs. Ladders must not be painted or coated with any opaque covering that would hide flaws or damage. Any ladder with structural defects such as broken or missing rungs, split or broken rails, corroded components, or other defects must be immediately marked as defective or tagged with a “Do Not Use” warning label and immediately taken out of service until repaired or destroyed. All repairs must restore the ladder to its original design criteria.

The load capacity of ladders is likely to be diminished following exposure to excessive heat, such as a fire, or to corrosive substances such as acids or alkali. These ladders should be removed from service.

In the event a ladder is discarded, it must be destroyed in such a manner as to render it useless.

*Appendix A* provides a ladder safety inspection checklist that may be incorporated into an overall ladder inspection program.

**Proper Use and Storage:**
Ladders are not designed to be platforms, scaffolds, skids, or braces. They must have parallel side rails and rungs, steps, or cleats which are uniformly spaced. Most importantly, workers must have different types of ladders available and be able to select the right one for the job.

Ladders must be transported and stored so as not to damage them. When transporting ladders, the overhang of horizontally stored ladders beyond the support points of the rack should be minimized. The support points should be constructed of material such as wood or rubber-covered pipe to minimize the effects of vibration, chafing and road shock. Securing the ladder to each support point will greatly reduce the damaging effects of road shock.

Storage racks for ladders not in use should have sufficient supporting points to avoid sagging which can result in warping the ladder. Other materials must not be placed on the ladder while it is in storage.
Ladders should be stored in areas which do not expose them to potential damage from material handling traffic or weather conditions that may warp or split wood components.

**Training and Enforcing Safe Work Practices:**
Most ladder related accidents are caused by their misuse. Per OSHA, “The most recent accident statistics suggest that the working men and women in America abuse and misuse ladders in the workplace as a rule rather than an exception.”

Workers must be trained in the proper selection and safe use of each ladder available to them. The on-product safety information is specific to the particular type of ladder on which it appears. The worker is not considered qualified or adequately trained to use the ladder until they are familiar with this information. Employers must immediately reinforce the proper and safe use of ladders whenever unsafe work practices are observed.

Appendix B provides a few ladder safety tips that may useful for worker training. Appendix C provides a ladder safety quiz which can be used to reinforce training.

**Personal Protective Equipment:**
Workers using ladders, or working near them, need to wear proper equipment including sturdy shoes with non-skid soles, and hard hats, whenever a hazard of falling materials exists.

**Regulatory Responsibilities:**
State and Federal OSHA have specific safety regulations for ladders. You should know these regulations and abide by them. The American National Standards Institute (ANSI) also publishes voluntary consensus standards for ladder safety. These standards should be reviewed and incorporated into your ladder safety program.

**Information Sources:**
Occupational Safety & Health Administration: [www.osha.gov](http://www.osha.gov)
National Institute for Occupational Safety & Health: [http://www.cdc.gov/niosh/](http://www.cdc.gov/niosh/)

**Summary:**
The number one hazard from ladder misuse is falls. These types of accidents are often serious, costly, and sometimes deadly. They are, however, easily preventable in most cases. It is up to you to make sure that all your workers are trained in the proper use of this equipment and that you continually reinforce their safe use.

Everest National Loss Control offers a host of loss control information and value added services that may be beneficial to your loss prevention efforts. If you would like more information about these services, visit our web site at [www.everestregroup.com](http://www.everestregroup.com).

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## Appendix A

**Model Ladder Inspection Checklist**  
*To be customize to meet your specific needs*

<table>
<thead>
<tr>
<th>Date</th>
<th>Inspector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ladder #</td>
<td>Location</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Single</th>
<th>Extension</th>
<th>Step</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Wood</td>
<td>Aluminum</td>
<td>Fiberglass</td>
<td>Other</td>
</tr>
</tbody>
</table>

### General

<table>
<thead>
<tr>
<th>Item</th>
<th>OK</th>
<th>Repair</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side rails and legs splinter free</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Joints tight between the rails and steps</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Metal hardware is secure</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>No splits on rails or rungs</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Free of gouges or dents</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>No evidence of excessive wear, crushed, cracked, or missing, rungs steps, tops or platforms</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>No excessive play in rails</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>No broken or bent guide irons, spreader or locks</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Rusted or corroded spots</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Non-slip bases in good condition</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Rivets are not sheared, pulled through, uncurled, or loosened</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>No loose screws, bolts, or other metal parts</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Ladder is not wobbly</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

### Stepladders

<table>
<thead>
<tr>
<th>Item</th>
<th>OK</th>
<th>Repair</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hinge spreaders are not loose or bent</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Hinge stop no broken</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Pail shelf not dented, or broken</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

### Extension ladders

<table>
<thead>
<tr>
<th>Item</th>
<th>OK</th>
<th>Repair</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>No loose, broken or missing locks</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Locks seat properly</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Ropes not frayed, damaged or worn</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Pulley good condition and moves freely</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

If any item needs to be repaired tag the ladder ‘Do Not Use’ and remove from service.
Appendix B
Best Practice Tips for Workers Using Ladders:

General

☐ When possible, use safer alternatives to ladders such as extension poles or aerial lifts.
☐ Use ladders only for the purpose for which they were designed.
☐ Read and follow all labels & markings on the ladder.
☐ Always inspect the ladder before using it.
☐ Do not use ladders if any of the following exist:
  ➢ Loose or missing parts,
  ➢ Rickety or any sway or leaning to the side
  ➢ Bent, broken or damaged components
  ➢ Ladders where the rungs or rails have been repaired
  ➢ Defective ropes or other structural defect.
☐ Immediately report all damage or adverse conditions to your supervisor.
☐ If the ladder is damaged, removed it from service and tagged “Danger, Do Not Use” until repaired or discarded.
☐ Keep ladders free of oil, grease or other slippery materials. Wear shoes with clean, non-skid soles. Clear soles of mud or other debris before climbing a ladder.
☐ Never paint or coat ladders with any opaque covering that would hide flaws or damage.
☐ Use a ladder only on a stable and level surface, unless it has been secured (top or bottom) to prevent displacement.
☐ When the ladder is set-up for use, it must be placed on firm level ground and without any type of slippery condition present at either the base or top support points.
☐ Always maintain a 3-point contact (two hands and a foot, or two feet and a hand) on the ladder when climbing. Keep your body near the middle of the step and always face the ladder while climbing.
☐ Avoid leaning to the side, keep your belt buckle between the side rails.
☐ Avoid electrical hazards!
  ➢ Look for overhead power lines before handling a ladder.
  ➢ Use only non-conductive ladders near power lines or exposed energized electrical equipment.
  ➢ Do not work near energized electrical lines unless you are trained, qualified and authorized by your supervisor.
  ➢ Maintain at least ten feet distance from all energized lines.
  ➢ Never use a metal ladder around electrical lines.
☐ Do not carry any object or load while ascending or descending. Doing so could result in a loss of balance and fall. Transfer tools and equipment by rope, tool belt or other mechanical means.
☐ Do not place ladders against windows, sashes, or other unstable, low strength surfaces. If necessary to support the top of the ladder at a window opening, or other low strength surfaces attach a device across the back of the ladder and extending across the window or other low strength surface to provide firm support against the building walls or window frames.
☐ Stay off all ladders if you are prone to fainting or dizziness.
☐ Do not use ladders as platforms, scaffolds, skids, or braces.
☐ When finished with ladder at the end of the day, remove it and carefully store it in a designated area.
Ladder Safety

Do not exceed the maximum load rating of a ladder. Be aware of the ladder’s duty rating. This rating must be greater than the total weight of the climber, tools, supplies, and other objects placed upon the ladder.

Do not use chairs, boxes, tables or other types of platforms as ladders or working platforms.

Do not use ladders outdoors in high winds or storms.

Only one person at a time is permitted on a ladder unless the ladder is specifically designed for more than one climber, such as a trestle ladder.

Ladders must not be placed in front of closed doors that can open toward the ladder. The door must be blocked open, locked, or guarded.

Never jump or slide down from a ladder or climb more than one rung/step at a time.

Never place a ladder on other objects such as boxes, barrels, scaffolds, or other unstable bases in an effort to obtain additional height.

The ladder must not be used on ice, snow or slippery surfaces unless suitable means to prevent slipping is employed.

Proper positioning and set-up by placing the ladder as close as possible to the work area to avoid over-reaching and fully extending and locking the ladder’s legs in position.

**Straight & Extension Ladders**

- Do not move or shift a ladder while a person or equipment is on it
- Do not tie or fasten together single ladders to create longer sections.
- Straight or extension ladders used to access an elevated surface must extend at least 3 feet above the point of support
- Do not stand on the three top rungs.
- The ladder must be secured at the top to avoid displacement.
- Make sure the ladder has slip resistant feet, especially when using it on slippery surfaces such as gravel, loose dirt, or surfaces coated with water or oil.
- Secure the ladder in place with a rope & stake or other effective method, or get a fellow employee to hold it in place.
- Secure ladders that are positioned in any location where it can be dislodged by other work activities to prevent displacement or erect a barricade to keep traffic away from the ladder.
- Do not use ladders greater than 30 feet in length.
- Angle the ladder so that one-fourth of its working length equals the distance between the vertical support and the ladder feet.
- Install a platform between each ladder and offset the ladders when more than one is needed to reach an elevated work area.
- For ladders used to access an upper level, they must be tied to the upper access level before climbing onto or off them at the upper level. The user must take care when getting on or off the ladder at the upper level in order to avoid tipping the ladder over sideways or causing the ladder base to slide out.
- Never attempt to move the ladder without first descending, relocating the ladder, and then re-climbing. Do not attempt to mount the ladder from the side or step from one ladder to another unless the ladder is secured against sideways motion.
Ladder Safety

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- Do not step or stand higher than the step indicated on the label marking the highest standing level to avoid losing your balance and falling.
- The anti-slip feet must be present and in good condition prior to using the ladder.
- Do not set-up the ladder upside-down. That is, with the fly section at the bottom and the base section at the top with the rung locks engaged.
- Stand at the base of an extension ladder to adjust it and verify that the rung locks have engaged. Do not extend the ladder when anyone is standing on it.
- Verify that the extension rope is tracking correctly in the pulley.

Articulated Ladders

An articulated ladder is a portable ladder with one or more pairs of locking hinges which allow the ladder to be set up in several configurations such as a single or extension ladder, with or without a stand-off, a stepladder, a trestle ladder, scaffold or work table. Each pair of articulated joints in the ladder can be locked in one or more positions. The locking positions of the hinges allow set-up at the proper angles to accommodate each configuration that the manufacturer has designated.

- Verify that all hinges are locked before use.
- Never attempt unlocking or repositioning any of the hinges while standing on the ladder.
- When involved in messy work, place a covering over the exposed hinge mechanisms to avoid getting contaminants into them that may cause malfunctions.
- Do not configure the ladder other than illustrated on the label affixed to it.
- Before use, verify that slip-resistant material is covering all four feet of the ladder.
- Do not tie or fasten together articulated ladders or connect them with any other type of ladder to increase length.

Step Ladders

- Choose a stepladder that is no more than 4ft. shorter than the height you want to reach.
- Do not use a step ladder as a straight ladder or in a partially closed position.
- When placing tools or containers on the ladder shelf keep their weight within the center line of the ladder.
- Never place heavy items on the top or side of a ladder.
- Never work from the top two steps of a ladder.
- Always face the step ladder treads while using step ladder.
Appendix C
Ladder Safety Quiz

Date: __________________ Name: ______________________________

1. An extension ladder must extend ____ feet above the landing to provide a handhold for getting on and off the ladder.
   a. 1 ft.
   b. 3 ft.
   c. 6 ft.
   d. 2 ft.

2. If a ladder is found to be defective on the jobsite, you should:
   a. Use the ladder to get through your task and be sure to replace it later
   b. Make the repairs on the spot
   c. Mark or tag the ladder as defective and take it out of service
   d. Continue using the ladder until it gets really bad

3. Which of the following is NOT true about ladders?
   a. Stepladder must be used in a fully open position on firm level ground
   b. Extension ladders must extend 3’ above a work level.
   c. Stepladders can be used in a leaned position as long as someone is holding the ladder
   d. Extension ladders must be set at a 4:1 ratio for safe use.

4. Which of the following safe work practices will prevent falling while working from ladders?
   a. Face the ladder when ascending or descending
   b. Maintain three points of contact
   c. Keep your body centered on the ladder
   d. All of the above

5. When selecting a ladder based on its duty rating, which is NOT taken into consideration?
   a. Worker’s weight
   b. Tools needed for the task
   c. Duration worker will occupy ladder
   d. Materials needed for task

6. Metal ladders can be used near electrical sources if it has rubber feet at the bottom
   a. True ______
   b. False _____

7. A ladder whose top support is 16 feet high should be how far from the building?
   a. 2 feet
   b. 4 feet
   c. 3 feet
   d. None of the above

8. Selecting a ladder for the job depends on the:
   a. Weight of the Ladder
   b. Weight of the user
   c. The rating of the ladder's tensile strength
   d. Total weight of the user plus tools.

9. Which rungs of a step ladder are not safe to stand on?
   a. Top two rungs.
   b. Top rung.
   c. Top three rungs.

10. The safest way to pull materials up the ladder is by hauling them up as you go?
    a. True
    b. False
Ladder Safety Quiz - With Answers

1. An extension ladder must extend ___ feet above the landing to provide a handhold for getting on and off the ladder.
   a. 1 ft.
   b. 3 ft. XXX
   c. 6 ft.
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   b. Make the repairs on the spot
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4. Which of the following safe work practices will prevent falling while working from ladders?
   a. Face the ladder when ascending or descending
   b. Maintain three points of contact
   c. Keep your body centered on the ladder
   d. All of the above XXX

5. When selecting a ladder based on its duty rating, which is NOT taken into consideration?
   a. Worker’s weight
   b. Tools needed for the task
   c. Duration worker will occupy ladder XXX
   d. Materials needed for task

6. Metal ladders can be used near electrical sources if it has rubber feet at the bottom
   a. True ______
   b. False _____ XXX

7. A ladder whose top support is 16 feet high should be how far from the building?
   a. 2 feet
   b. 4 feet XXX
   c. 3 feet
   d. None of the above

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   a. Weight of the Ladder
   b. Weight of the user
   c. The rating of the ladder's tensile strength
   d. Total weight of the user plus tools. XXX

9. Which rungs of a step ladder are not safe to stand on?
   a. Top two rungs. XXX
   b. Top rung.
   c. Top three rungs.

10. The safest way to pull materials up the ladder is by hauling them up as you go?
    a. True
    b. False XXX