

## Vertical communication – best practices for work on a ladder

Falls from heights present a considerable risk in the construction industry and other industries as well. These do not concern falls from high structures; injuries may result from a fall from much lesser heights, e.g. from ladders through inappropriate use. There are numerous factors that can be the cause of such an accident. These range from the bad choice of a ladder to the failure to comply with basic safety rules for work on a ladder. Technical requirements for ladders are specified in ČSN EN 131-1 (49 3830-1) “Ladders. Names, types, functional dimensions” and ČSN EN 131-2 (49 3830-2) „Ladders. Requirements, testing, designation” of February 1995. Safety requirements for the use of ladders are specified in Government Order No. 362/2005 Coll., to regulate more specific requirements for occupational safety and health in places of work where there is a risk of a fall from a height or a fall to a depth. The following rules are designed for portable ladders; they do not apply to ladders used as permanent climbing structures.

### Selection of a ladder

When selecting a ladder it is necessary to take into account the purpose and the conditions of use of such a ladder. With respect to the application, it is possible to divide these products into two basic categories – professional ladders exposed to frequent stress (e.g. ladders for artisans) and ladders for the so-called “hobby” applications. In addition, it is necessary to consider a selection based on material (wood, steel, aluminium or plastic) and type (rack ladders - single lean-to, extension, extending, multi-purpose or double ones and foot lean-to and double ladders with single or double ascent). All types must comply with the above-mentioned standards; however, they may differ as far as the possibility of their application is concerned.

### Fundamental rules for the use of ladders

- A ladder can only be used for short-term, physically undemanding work requiring the use of simple tools.
- A ladder must be installed on the floor (ground) so that it has sufficient stability. It must be secured against displacement, slipping, lateral displacement, overturning and opening. Both the upper ends of the side pieces of single ladders must be safely leant against the vertical surface. Any levelling of surface irregularities using improvised base materials (bricks, mounts, etc.) is forbidden!
- Ladders used for climbing must exceed the climbing level at least by 1.1 m. The overhang of a ladder can be substituted by a firm part of the structure, which can be grasped reliably. The overhanging part of a ladder must not be stepped on.
- The free space behind ladder steps must be at least 0.18 m; it is necessary to leave a minimum space of 0,6 m at the foot of a ladder on the climbing side.
- The angle of rack ladders, single as well as double ones, (upon opening), defined in the above-mentioned standard must be 65° - 75°, in case of foot ladders 60° - 70° from the horizontal plane. Pursuant to Government Order No. 362/2005 Coll., the angle must not be less than 2.5:1 (i.e. approx. 68° from the horizontal plane).

- In case of extending, multi-purpose and double ladders, it is necessary to make sure that hooks, fasteners and other securing devices are functional and in the right position.
- Ladders can be used only in the assembly defined by the manufacturer.
- In case of extending ladders, sufficient overhanging of the individual component parts based on the manufacturer's instructions must be secured.
- Maximum load of ladders specified by the manufacturer must not be exceeded.
- The use of ladders as cross-over bridges is forbidden!
- Visual inspection of ladders must be performed upon their issue, their return and prior to every use.

## Ascents, descents and work on a ladder

- When ascending, descending and working on a ladder, an employee must face the ladder and they must have the possibility to hold on to it with both their hands.
- Only one person is allowed to ascend, descend and work on a ladder. Simultaneous work of more persons above each other is forbidden!
- An employee must not lean out to one side or backwards while working on a ladder. With respect to a change in the position of an employee's centre of gravity, loss of their stability and fall can occur.
- Loads, the weight of which exceeds 15 kg, must not be taken up and down a ladder. Auxiliary material, tools or possible other equipment necessary for work must be placed in a kit, in a waist belt designed for the respective purpose or fastened to the ladder to prevent the loss of stability of the ladder or of an employee.
- Works, during which hazardous tools are used, e.g. portable chain cutting saws, manual pneumatic tools, etc., are not allowed to be performed on a ladder.
- While working on a ladder, an employee must stand a safe distance away from its upper end, which means: in case of a single ladder, minimum 0.8 m, and in case of double ladders, 0.5 m from the end of the ladder. It is always necessary to respect the manufacturer's instructions.
- During work on a ladder, when an employee's feet are at a height exceeding 5.0 m, the employee is obliged to use personal protective security against a fall.
- It is not possible to use portable wooden ladders, the length of which exceeds 12 m.
- The area under a ladder, on which work is being performed, must be secured. In case of short-term work, it is sufficient under standard circumstances for a responsible employee to safeguard the hazardous area during the work.
- The employer must secure inspections of ladders in compliance with the instructions for their use. In addition to a visual inspection prior to every use, it is advisable to check the functionality of a ladder and the parts thereof at regular intervals, e.g. on an annual basis.

Information on the right use of ladders is often placed on the respective ladder in the form of pictograms. It is always necessary to adhere to the instructions and bans depicted or given in the manufacturer's instructions.

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