

M2-EN.3 WORKING ABOVE THE GROUND, SCAFFOLDINGS, LIFTS, LADDERS, ETC

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M2-EN.3.1 Introduction

In this chapter, the typical risk factors when working above the ground, are described e.g. on roofs and ladders, lifts, scaffoldings, etc. The objective of this chapter is to:

- Identify the most common risk factors
- Describe the constitution of the risk
- Make proposals on how to reduce these risk factors

The risks, which are specifically connected to work above the ground, may be divided into two main groups:

- People, materials or tools that may fall down
- Material that may break down or tip over because of defects or incorrect use

In both cases, the risk of people being injured is immediate and obvious. There may be all kinds of injuries from blows to permanent injuries and life threatening or lethal injuries. Beyond the physical injuries one must be aware of the mental after effects that people might get as a consequence of an industrial injury, and which in the worst

case may be excessively disabling, and just like the physical injuries result in loss of working capacity for a shorter or a longer period of time, some times even for life.

When assessing the risk at working above the ground, must consider both the people above ground as well as the people on the ground.

Beyond the common risk factors, all kinds of work on roofs or ladders, lifts or scaffoldings have their specific elements of risk. These are described in each of the following chapters together with the safety precautions that are prescribed in connection with the work.

M2-EN.3.2 Working on Roofs

The risk when working on roofs depends – beyond on the height and the inclination of the roof – also on the kind of work, the weather conditions, the type of roof surface and the surface that the worker is to land upon if falling. (M2.3.1.jpg - M2.3.5.jpg)

Risk Factors

- Falling of Workers
- Falling of objects
- Working on fragile material
- Risk of collapse
- Blowing off materials and tools from the roof due to strong wind

Safety Measures

- When the height of fall is more than 2 meters, a guardrail which beyond doubt can stop persons about to fall from the roof, must always be set up.
- On roofs with an inclination of more then 15 degrees roof ladders must be used if it is not safe to walk on the laths
- Examine the carrying capacity of the roof and take the necessary precautions
- If there is a risk of collapse, gangways with a secure guard rail combined with a safety net between the gangways should be used
- Make sure that the safety net is suspended and maintained in conformity with the prescriptions
- The workers should be secured against falling materials and tools with guard boards, safety nets or other kind of protection

M2-EN.3.3 Front and Mason Scaffoldings

The highest degree of safety when working in height is achieved when solid fronts or bricklayer's scaffoldings are used. Working on correctly erected scaffoldings is as safe as on the ground. The scaffolding must be adjusted to the jobs which are to be carried out according to its carrying capacity, width, height etc (M2.3.6.jpg, M2.3.7.jpg). The particular circumstances, when working on roofs, must be taken into consideration. Pay special attention when the scaffolding is placed near electric overhead lines. The lines must then be insulated against contact, or the power must be switched off.

Risk Factors

- Scaffolding units are often heavy and unmanageable. Erecting and dismantling the scaffolding imply a considerable risk of overloading of the body.
- The scaffolding may tip over or collapse
- People, material and tools may fall from the scaffolding
- Risk of collision with a car

Impact on Human Health

- Overloading may occur suddenly, if you e.g. lose your balance while carrying heavy burdens. The overloading may also happen in the long run when the body becomes worn out and unfit for work
- According to the circumstances falling may lead to all kinds of injuries from blows to permanent injuries and life threatening or lethal injuries. Workers on the scaffolding as well as near it are at risk

Safety Measures

- Avoid manual handling of the material. Use suitable technical facilities instead
- Make sure that the scaffolding stands on solid foundation and that eventual chocks are stable
- Do examine all parts of the scaffolding and make sure that they are whole, without deformations or corrosion
- Mark out the scaffolding if there is a risk of collision
- Make sure that the floor fills out all of the scaffolding
- Do not use ladders on the scaffolding
- If the working height is more than 2 meters, the scaffolding must be equipped with guard rails, i.e. handrail, knee-high rail and skirting-board
- Access to the scaffolding must be through stairways, ladders or rope ladders. Openings in the scaffolding floor must be closed when working on the scaffolding
- Particular precautions must be taken when working on roofs and near electric overhead lines

M2-EN.3.4 Ladder Scaffoldings and Trestlework

Only persons with the necessary training must erect rolling scaffoldings and trestlework in more than 3 meters high. The rolling scaffoldings must be provided with information on maximum weight on the floor and on points. The use of supporting legs and securing at fixed building units must likewise be stated in the information material, which comes with the rolling scaffolding.

Risk Factors

- Trestlework may roll and be put out of balance

Safety Measures

- Always make sure that the scaffolding is plumb and does not tip
- Make sure that the brakes are put on when in use. The brakes must be easy to handle with no use of tools.
- People are not allowed on the scaffolding when it is moved

M2-EN.3.5 Person Lifts

At long lasting work above the ground person lifts or front lifts may be used instead of scaffoldings. (M2.3.8.jpg) The risk of falling is obvious if the equipment is not used in conformity with the manufacturer's instructions.

Risk Factors

- The lift may tip or something may bump into it
- Hands or other body parts may be crushed between the work stand and walls, ceilings, protruding objects or the lift itself
- Overloading or defects on the material
- Falling of the equipment when dismantling
- Electrical hazards

Impact on Human Health

- As well as falling, crushing may also lead to severe injuries which in worst case may be lethal
- Upper or low limbs injury
- Electrocutation

Safety Measures

- Only workers at the age of 18 or older who are properly instructed may use the lift
- The work stand must at all sides have a 1,1 meter high fence. The gate must be self-closing and open inward.
- Make sure that the foundation is stable and the supporting legs are in use
- Install a handrail in conformity with the manufacturer's instructions
- Control buttons must have a dead-man control and their function must be marked with pictograms easy to understand
- A ground assistant must always be present who in case of emergency can lower the work stand. The ground assistant must be able to operate the lift
- Make sure that the work platform has information on maximum work load, etc. – and do obey the manufacturer's instructions
- Provide fencing on the ground base of the equipment
- Follow the procedure described by the manufacturer when erecting and dismantling the lift

- Provide for maintenance

M2-EN.3.6 Front Lifts

It involves the same risk as person lifts. One must pay special attention to the faultlessness of the capstan and the security system for catching. (M2.3.9.jpg)

Risk Factors

- Front lifts may be caught by roughness or protruding objects in the wall

Safety Measures

- The work stand must have a 1,1 meter high fence at all sides
- Make sure that the front lift is supplied with smooth-running spools or the like to avoid catching
- Make sure that the front lift is examined and kept in good order according to the manufacturer's instructions

M2-EN.3.7 Ladders

Ladders are the most simple and maybe the most common used aid for working at a low height. (M2.3.10.jpg) It is though unstable and a physically hard job to work from ladders, therefore, the workers are only allowed to use them for a shorter period of time. Considering this, each working period on the ladder may not exceed 30 minutes. When working alternatively from ladder and from solid ground, working from the ladder may not exceed more than one third of the total daily working time.

Risk Factors

- Fall of the ladder
- Fall of the worker
- Fall of objects i.e. tools
- Incorrect working postures are hazardous for the body and lead to increased risk of falling or accidents with the tools

Impact on Human Health

- Injury of the worker or any other person on the ground
- Injury from falling objects i.e. tools
- Working on ladders is hard specially for the feet, the knees and the back and may impede the circulation

Safety Measures

- Do not use a ladder to perform a job at a height more than 5m from the ground
- Secure the ladder on the top and the bottom or use another person to secure it when working
- Keep tools in special pockets on the workers clothes

- Use appropriate footwear
- Only one person on the ladder is allowed
- Carry only light and handy burdens on the ladder
- Use only tools which can be handled with one hand
- Always follow the specifications of the ladder with respect to maximum length, weight, inclination, etc.
- Do examine the ladder on a regular basis for looseness, corrosion, cracks and tears. Repair or discard the ladder if necessary