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1. INTRODUCTION

Portable ladders are one of the most widely used types of equipment in working at height for all sectors of industries and facilities due to its versatility to undertake many types of jobs, ease of use, availability and practicality. However, occupational accidents due to portable ladders are also prevalent, wherein the highest global statistic is falls from height due to its improper and unsafe use.

Dubai Municipality (DM) is also monitoring working at height incidents and based on occupational safety inspections and accident investigations conducted by the civic body, it was revealed that ladder use related accidents are due to various reasons such as use of damaged or faulty ladders, incorrect ladder set-up, unsafe use of ladders, failure of the management to provide the necessary instructions and trainings, failure to conduct risk assessment, safe systems of work are not in place or are not implemented, etc.

2. PURPOSE

This technical guideline has been prepared to provide the necessary guidance on safe use of ladders and to further highlight the responsibility given to the employer as stated in DM Local Order 61/1991, Article 38.4 to “Take every precaution necessary for the protection of the worker and ensure his safety from occupational illness or potential work accident”. This guidance document is recommended to be read in conjunction with Dubai Municipality's Code of Practice for Managing Safe Work at Height.

3. SCOPE

This technical guideline, shall apply to all commercial and industrial establishments, public or government institutions, including construction and service related worksites in the Emirate of Dubai.

This document provides minimum guidance on proper selection, set-up, use, training and maintenance of ladders (e.g. single ladder, extension ladder, stepladder, etc.).
4. DEFINITION

Unless the context otherwise requires, the following terms shall be deemed to mean the definitions hereby assigned to them.

**Ladder**
A ladder is a vertical or inclined set of rungs or steps used for access. It has many types such as single ladder, extension ladder, stepladder, platform ladder. Fixed vertical ladders, rope ladders and self-made (improvised) ladders are not included in this definition.

**Rung**
Short cross piece of the ladder that forms the steps of a ladder.

**Stile**
Vertical member of a ladder connecting the ends of ladder steps or rungs. Stile is also known as stringer or rail.

**Extension Ladder**
A type of ladder consisting of two or more sections joined by a sliding mechanism that allows the ladder to be extended to its designed total length.

**Stepladder**
A type of ladder having broad flat steps joined to a supporting frame hinged at the top so that it can stand on its own.

**Platform Ladder**
A type of ladder which is self-supporting and non-adjustable in length. It is provided with a platform surface on the top which is surrounded by railings on three sides.
5. GUIDELINES

A. Hazard Identification and Risk Assessment

Before considering working at height, employers must assess the risks and take whatever steps the assessment shows are necessary to work safely (always consider if it is safer to work on the ground than working at height). The risk assessment shall only be carried out by competent person(s)/team of an organization. As a guidance, the employer shall refer to DM Code of Practices for OHS Risk Management and Managing Safe Work at Height.

In conducting risk assessment for working at height, the following factors shall be considered to ensure the safety of the workers, the public and others that might be affected:

- Work site and environmental conditions, including its location, access and egress to and from the site, weather and ground conditions of the site and the risks relating to other activities on the site or surrounding area;
- Task to be performed, including the extent of the task and its complexity;
- Duration and the frequency with which the task needs to be performed;
- People involved including the numbers involved in the work, the degree of their exposure to the risk, the competence of the workers involved, and the level of supervision required;
- The risks to, or presented by those not directly involved in the work;
- Work equipment and/or other structures to be used, including the suitability of existing structures for work at height, the existence of fragile surface, the selection of work equipment to be used and any risks arising from pre and post use of the work equipment.

When the risk assessment has shown that alternative forms of access is not possible for use, or using equipment offering higher level of fall protection is not justifiable due to low risk and short duration of work at height (less than 30 minutes), or there are existing workplace features that cannot be altered, then use of ladder shall be considered since it is the only sensible and practical solution.

However, ladders shall only be used in situations where it can be used safely (e.g. ground is level and stable, ladder can be secured, it is reasonably practicable to do so, etc.).

B. Safe Systems of Work

Employers are required to implement safe systems of work in every work site which includes information, training, instruction and supervision. Safe systems of work must be properly communicated to all stakeholders.
detailing potential hazards, duties and responsibilities, work plan, procedures and guidelines. Ensure that workers are properly trained in the proper use of ladders, proper positioning, etc.

Safety management systems shall be properly reviewed and revised to assess effectiveness and suitability of all existing control measures.

C. Selecting Ladders

If ladders are to be used, ensure that the following are considered in selecting the right type of ladder:

- Ladder shall be in good condition meeting the current EN 131 professional standard or equivalent UAE or international standard. Do not use ladder which are not designed and not rated for occupational (work related) setting;
- Duration of the task;
- Physical surroundings wherein the job is to be conducted;
- Prevailing weather conditions;
- Selected type of ladder shall be structurally sound;
- Choose the ladder that is suitable for the job (e.g. single ladder, extension ladder, platform ladder, stepladder). Do not use the same ladder for all types of jobs;
- Ensure that the ladder is of appropriate length for the task to be carried out;
- Ladder selected shall be of proper material (e.g. metal, reinforced plastic, wooden) and appropriate size which meets the job requirements;
- In case wherein fittings and accessories are to be used, the supplier or manufacturer shall be contacted to determine the proper fitting and accessories to be used. The ladder, shall not be altered without proper authorization and advice;
- Ladders used shall meet the minimum safe working load requirements of 150 kg;
- Self-made ladders and improvised access equipment are prohibited.
- Maximum length of ladders used as specified below shall not be exceeded:

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Type of Industrial Ladder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single Ladder</td>
</tr>
<tr>
<td>Metal Ladders and Reinforced Plastic Ladders</td>
<td>9 meters</td>
</tr>
<tr>
<td>Wooden Ladders</td>
<td>5.5 meters</td>
</tr>
</tbody>
</table>
D. Setting Up Ladders

Read and follow manufacturers’ instruction in setting up ladder.

Ladders which are long and heavy (more than 20 kg) shall be handled by at least two persons.

Pre-use check shall be conducted to ensure that the ladder is safe for use (e.g. no loose rivets, no missing steps, safety components are fixed and properly working, etc.). Refer to Annex A.

Base of the ladder shall be placed on a firm, level, dry and stable surface. If work will be conducted on soft or uneven ground, use a plank, board or appropriate material under one or both feet of the ladder to have a stable surface (i.e. supporting plank or board to have appropriate thickness and large enough not to sink to the ground on either side of the ladder base).

Ladder shall not be placed on top of boxes, barrels, any loose material or on equipment to gain extra height. Use appropriate leveling devices by communicating with the manufacturer or supplier.

Ladder shall not be used on top of moveable objects such as bricks, lift trucks, pallets, excavator buckets, vans, scaffolds, mobile elevated work platforms, etc.

Ladder shall set up on a clean and non-slippery surface. The base of the ladder shall not slip outwards. For extension ladder, always extend it to an appropriate height before use. When adjusting the extension ladder, ensure that no person is positioned on the ladder, no person is reaching through the ladder and handled carefully to avoid injury from sliding parts and other components.

Lean the ladder against a solid surface which is strong enough to carry the loads and never on unstable, fragile or narrow surfaces such as gutters, plastics, etc.

Figure showing use of a stand-off device to ensure a strong resting point.
Position the ladder at the correct angle between 70 to 80 degrees (one meter horizontally for every four meters vertically is ideal). Remember the rule “One Out for Four Up”.

![Ladder Angle](image)

Position the ladder facing the right way wherein the steps are facing the work activity.

Ladder shall be long enough to provide at least one (1) meter above past the highest point that needs to be accessed.

Ladder base and top shall be properly secured by fixing or tying it with ropes or straps to a stable and fixed object. If it is not possible to secure the ladder having less than 3 meters in length, another person shall stand with one foot at the bottom of the rung while holding the stiles with both hands as a last resort (where practicable, avoid it by considering use of other access equipment).

Ties used to secure the ladder shall be attached to the stiles and not the rungs or steps.

Ladder shall be kept free from any obstructions at the base and top.

All locking and stabilizing mechanisms of ladders are properly and securely engaged.

Each extended section of extension ladder is properly locked at both ends of the rung.

Stepladders shall be set up in fully open position with all feet are in contact with the ground and the steps are level.

Metal, wooden ladders with metal parts or any type of ladder made of conducting material shall not be used on or near any electrical hazards.

A minimum safe distance must always be kept between the overhead lines and the closest point of the ladder. This distance is 15 meters with overhead lines mounted on steel towers and 9 meters with lines mounted on
poles of wood, concrete or steel. Also, refer to the existing safe distance requirements of DEWA or any concerned authority where work is conducted. The stricter requirement shall be followed. Seek further advice before commencing work.

These distances are measured horizontally at ground level from a position vertically below the outermost conductor at the tower or pole position.

All overhead lines and other electrical apparatus should be treated as live unless declared “dead” and “Safe” by DEWA (or other line operator).

Ensure that electrical lines has been made de-energized or it is protected with insulation and with electrical work permit issued by competent person or authority.

Ensure use of non-conductive ladder for any electrical work.

Ladder shall be placed in areas wherein:

- It will not be struck by vehicles or moving equipment. Area shall be protected using suitable barriers with safety signage;
- It will not be moved or pushed by other hazards such as doors or windows. Ensure that the doors (not fire exits) and windows are properly secured;
- It will not be near the edge of open floor or penetration or side railing. If work is to be conducted, ensure that control measures are in place such as edge protection, fall protection requirements, etc;
- The general public (pedestrian) are prevented from using it, walking underneath it or being at risk because they are too near. Ensure that the area is provided with appropriate barriers and safety signage. Also, provide a person to act as a guide and to guard the base of the ladder (for areas having frequented by large volume of people specially children);
- It is properly secured.

E. Securing Ladders

(The following shall be ensured, when securing ladders having 3 meters or longer in length.)

After the ladder has been rested against a solid and stable structure, the base and top of the ladder shall be secured before any person will use it.
Brace or tie the ladder to a suitable point, making sure that both stiles are tied (see figures below):

Ladder tied at top stiles. Appropriate for working on but not for gaining access to a working platform, roof, etc.

Correct tying part way down. Correct tying near the base.

Where it is not practicable to brace or tie the ladder at the base, secure the ladder with an effective ladder stability device or stake at the ground.

Example of ladder stability device.

Ladders used to access another level should be tied and extended at least one (1) meter above the landing point to provide a secure handhold. Self-closing gates (with locking mechanism) is recommended at ladder access points.

Access ladders should be tied and extended at least one (1) meter above the landing point to provide a secure handhold.
Stepladders shall not be used to access another level, unless it is specifically designed for such use.

If it is not possible to secure the ladder, consider using safer means of access (e.g. MEWP, mobile access towers, etc.).

**F. Ladder Use Requirements**

Ladders shall not be used during event of strong winds, bad weather or if the user is sick or unfit to work.

Inspect ladder with checklist before use or after something has changed (e.g. ladder movement from one area to another, ladder has been dropped, etc.). Result to be confirmed and signed by competent person.

Ensure that the workers are properly trained on ladder use and understands instructions on safe system of work in place and hazards on the workplace (e.g. tool box talks).

Users shall read and follow safety labels and manufacturers’ instruction on ladder use.

Ensure that emergency response plans are in place in case of accidents (e.g. person falling from ladder).

Ensure that the ladder steps and footwear are clean and free from mud, grease or any material that may cause slips and falls before using the ladder.

Ensure appropriate Personal Protective Equipment (PPE) including safety footwear (with slip resistance) are worn when using ladders.

Sufficient space behind the steps shall be provided for proper footing.

Worker shall pay attention on electrical cables and overhead objects while using the ladder.

Never climb the ladder if it is not facing the right direction (steps are facing the work activity) or if the gaps between the rungs of the extended ladder are not even.

Only one person at a time is allowed to use the ladder for access, egress and light and short term work (less than 30 minutes).
Ensure that no person is present below the ladder while working on it.

Ladders’ safe working load shall not be exceeded. Consider the user weight and the tools, equipment and materials that will be carried before using the ladder.

Tools and materials shall not be carried while climbing the ladder. Light tools or materials can be carried in a holster attached to a belt or in a tool bag.

Tools and materials which cannot be safely secured by a tool belt or bag shall be independently hoisted up (e.g. by rope) or raised safely by another person.

User shall always grip and face the ladder when ascending, descending or using it.

Position the ladder as close as possible to the work and avoid over reaching. Ensure that the belts’ buckle of the user is inside the rails/stiles and both feet firmly standing on the same step while conducting work.

Ladder shall not be moved, extended and adjusted or its locking mechanisms tampered while a person is working on it.

Do not work on the top three rungs of the ladder and stand/sit on the top of the stepladder.

Do not conduct work which involves side loading (e.g. drilling side on through wall) which may lead to tipping over of the ladder. In case wherein side loadings are not possible to be avoided, the ladder shall be properly tied to a suitable point or use a more appropriate type of access equipment.

Ladders shall not be used as braces, runways, platforms or modified for any purposes that it is not designed for.

Do not stand with one foot on the ladder and the other on another surface.

Maintain firm handhold and three points of contact when using the ladder (i.e. one hand and two feet or one foot and two hands). When maintaining handhold is not possible, except for a brief period of time (e.g. starting to screw, holding a nail to start knocking it, etc.), then the two feet and the body shall be supported by the ladder or take other measures to prevent a fall.
User maintaining three points of contact (means of securing omitted for clarity).

Example where two hands need to be free for a brief period of light work. Note that the three points of contact is still maintained, wherein two feet are at the same step and the body (knee or chest) supported by the stepladder. Ensure availability of safe handhold.

Do not hurry to complete task. Observance of safety shall never be compromised.

When a ladder is left unattended or unused, ensure that the ladder is provided with safety signage and secured to prevent unauthorized access to the ladder.

Upon completion of work, ladder shall be closed, transported and stored in accordance with manufacturers' instructions.

G. Fall Arrest Systems

Employer shall consider use of personal fall protection system if the risk assessment has demonstrated that the work can, so far as is reasonably practicable, be performed safely while using that system, and the use of other safer work equipment is not practicable.

For requirements on personal fall protection system and various fall arrest systems such as anchorage lines or rails, the employer shall refer to Dubai Municipality OHS Technical Guideline on Personal Protective Equipment - Fall Protection and Code of Practice for Managing Safe Work at Height.
H. Care and Maintenance

The manufacturer or supplier of portable ladders shall provide all necessary information such as specifications, label and user instructions to the employer/workplace. All instructions shall be readily available to personnel that will be using and maintaining the equipment.

Ensure that all parts of the ladder are properly maintained in good condition at all times and specific instructions for the proper care and maintenance of ladders are followed.

Ensure that ladders are properly cleaned. Substances and materials such as paint, plaster, grease, oil and other contaminant shall be wiped off immediately to avoid incidents and before it dries or adheres permanently.

Ladder sections shall not be lubricated unless specified in user instructions of the manufacturer. If specified, use appropriate lubricant.

Ensure that ladders are properly stored in clean, dry and secured (restricted access) places.

Ladders shall not be hanged or stored vertically. When ladders are stored, ensure that no material is stacked on top of it and storage area permits easy access, inspection and safe withdrawal of ladders for use.

Ladders shall be properly handled and avoid dropping, damaging or misusing it. Damage to any part of the ladder (e.g. stiles, stabilizer, etc.) may adversely affect its integrity which may lead to accident during use.

Wooden ladders shall not be painted with opaque coating. If protective coatings are to be applied, ensure to use transparent wood finishes or preservatives to be able to distinguish deterioration or damage during inspection.

Wooden parts of ladders shall be smooth and without splinters, sharp edges, decay, damage or any irregularities. Low density wood material shall not be used in ladders.
Rope used in ladders (e.g. extension ladder) shall be in good condition at all times. Frayed or damaged rope shall be replaced and new rope shall be properly installed and meet the specifications in accordance with manufacturers’ requirements.

Ladders with missing or broken steps, rungs, cleats or stile, missing or loose bolts, fastenings or rivets, defective ropes, worn or damaged feet, missing or worn out non-slip material or any other defect that compromises the integrity of the ladder shall not be used, tagged as “Do Not Use or Out Of Order” and withdrawn from operation. Improvised repairs shall not be conducted.

Telescopic ladders shall not be dismantled or repaired. Contact the supplier for replacement and advice.

Ladders shall be regularly inspected by a competent person in accordance with manufacturers’ instructions and after occurrence of any incidents (e.g. person slip, fall from ladder, ladder being dropped, etc.). Ensure that inspection records are properly kept and be made readily available to DM OHS Inspectors upon request.

I. Instructions and Training

Employers are required to provide instruction and training for all workers and individuals who are at risk of falling from height by a competent person or third party company (i.e. internationally or nationally recognized ladder association or equivalent).

Records of any training including induction and tool box talks shall be properly kept for at least five (5) years and be made readily available to Dubai Municipality OHS inspectors and other regulatory agencies for review and demonstrate compliance with pertinent UAE and DM regulations.

Scope of training shall include hazard identification, correct positioning, safe use of ladders, spotting ladder defects, safe systems of work needed, selection of correct type of ladder for the work activity, fall protection equipment, ladder handling, storage, maintenance and inspection, and applicable federal and local regulations and guidelines.

Ensure that the training are delivered regularly (at least once a year) and is easily understood by all. Assessment shall include hands on use of ladders and other important aspects of training.

Employers shall also conduct additional refresher training if during periodic inspection reveals that workers are not able to implement ladder safe use procedures, after accidents and incidents (e.g. near misses and dangerous occurrences), etc.
6. REFERENCES


Australia: Safe Work Australia - Code of Practice: Managing the Risk of Falls at Workplaces


European Standard: Ladders - Professional (Industrial and Trade) (EN 131:2017)


United Kingdom: Health and Safety Executive (HSE) - Safe Use of Ladders and Stepladders
### ANNEX A: SAMPLE LADDER PRE-USE INSPECTION CHECKLIST

#### SAMPLE LADDER PRE-USE INSPECTION CHECKLIST

<table>
<thead>
<tr>
<th>No.</th>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manufacturers’ instructions available for use.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Safety labels/markings in place and clear.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rungs/steps are clean, dry and free from mud, grease, oil, dirt or any materials which may cause slip or fall.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Stiles are in good condition and without damage such as bending, cracks, splits, etc.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Rungs/steps are complete, fixed in place (not loose) and without any damage.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Locking and stabilizing mechanisms are in good condition and without damage.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Caps/rubber fittings of feet are complete, in place and in good condition (not damaged, worn or dirty).</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Any damage such as corrosion, sharp edges, dents, etc.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Bolts, fastenings, rivets, etc. are complete, in good condition and not loose.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Wooden parts are smooth and without splinters, sharp edges, decay, damage or irregularities.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Rope used in ladder (e.g. extension ladder) in good condition and without damage.</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Any damage or observations not included on the above:</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

*Ladders shall not be painted as this could hide defects. Instead, wooden ladders shall be painted with transparent coating.*

*If there is a “No” answer in any of above requirements which compromises the safety of the ladder, please contact the management or OHS in Charge of the company immediately for appropriate action such as tagging the defective ladder with “Do Not Use or Out of Order”, withdrawal from operation and necessary replacement.*
Further information is available from:

Health and Safety Department
Dubai Municipality
Tel: 800900
Safety@dm.gov.ae